

-600-

82-AspProHisSerGluTyrMetAspLysGlyTyrAlaGluIleLysGluSerThrSerGlyGluPheGly  
 ly-106  
 111-IleGlyGlnGluAspGlyPhe-117  
 122-SerProIleGluAspThrProAlaGluArgAlaGlyValLysSerGlyAspPhe-139  
 144-AspAsnValSerThrArgGlyMetThr-152  
 155-GluAlaValLysLysMetArgGlyLysProGlyThrLysIle-168  
 172-LeuSerArgLysAsnAlaAspLysProIle-181  
 199-LeuIleGluProAspTyrGlyTyr-206  
 211-GlnPheGlnGluArgThrValGlu-218  
 221-AsnThrAlaAlaLysGluLeuValLysGluAsnLysGlyLysProLeuLys-237  
 242-AspLeuArgAspAspProGlyGlyLeu-250  
 269-ValSerThrLysGlyArgAspGlyLysAspArgMetVal-281  
 284-AlaValProGluAspTyrVal-290  
 293-MetGlyGlyAspSerLeuAla-299  
 303-AlaGluIleLysThr-307  
 316-SerGlySerAlaSerAla-321  
 330-GlnAspHisLysArgAlaVal-336  
 340-ThrGlnSerPheGlyLysGlySerVal-348  
 354-LeuSerAsnGlySer-358  
 368-TyrThrProAsnAspArgSerIleGln-376  
 384-ValGluValLysAspGluArgIlePheGluSerArgGluAlaAspLeu-400  
 405-GlyAsnProLeuGlyGlyGluAspValAsnSerGlu-416  
 421-ProLeuGluLysAspAlaAspLysProAlaValLysGluLysGlyLysLysAspGluAspLeuSer  
 SerArgArgIleProAsnProAlaLysAspAspGlnLeuArgLysAlaLeuAspLeuValLysSerProGluGlnT  
 rpGlnLys-472  
 477-AlaAlaLysLysProValSerAsnLysAspLysLysAspLysLysAspLysLys-494

#### **Hydrophilic Regions - Hopp-Woods**

30-AlaAlaGluLysAspArgArgAspAsnGluVal-40  
 60-TyrTyrGlnAspLysProAspAlaAspLeuPhe-70  
 82-AspProHisSerGluTyrMetAspLysGlyTyrAlaGluIleLysGluSerThrSerGlyGlu-103  
 111-IleGlnGluAspGlyPhe-117  
 122-SerProIleGluAspThrProAlaGluArgAlaGlyValLysSerGlyAspPhe-139  
 144-AspAsnValSerThr-148  
 155-GluAlaValLysLysMetArgGlyLysProGlyThr-166  
 172-LeuSerArgLysAsnAlaAspLysProIle-181  
 211-GlnPheGlnGluArgThrValGlu-218  
 221-AsnThrAlaAlaLysGluLeuValLysGluAsnLysGlyLysProLeuLys-237  
 242-AspLeuArgAspAspProGly-248  
 271-ThrLysGlyArgAspGlyLysAspArgMetVal-281  
 303-AlaGluIleLysThr-307  
 330-GlnAspHisLysArgAlaVal-336  
 370-ProAsnAspArgSerIleGln-376  
 384-ValGluValLysAspLysGluArgIlePheGluSerArgGluAlaAspLeu-400  
 408-LeuGlyGlyGluAspValAsnSer-415  
 421-ProLeuGluLysAspAlaAspLysProAlaValLysGluLysGlyLysLysAspGluAspLeuSer  
 SerArgArgIleProAsnProAlaLysAspAspGlnLeuArgLysAlaLeuAspLeuValLysSerProGluGlnT  
 rpGln-471  
 477-AlaAlaLysLysProValSerAsnLysAspLysLysAspLysLysAspLysLys-494

**a733**

#### **AMPHI Regions - AMPHI**

6-ThrLeuSerArgLeuSer-11  
 33-TyrGlyGlyTyrProAspThrValTyrGluGly-43  
 53-LysGlnThrGluLysMetGluLysTyrPheVal-63  
 92-GlyAlaPheArgGlnPheGluGlu-99

**Antigenic Index - Jameson-Wolf**

2-MetAsnProLysThrLeuSer-8  
 22-CysGlyGlyAsnGlyGlnLysSer-29  
 33-TyrGlyGlyTyrProAspThrValTyrGluGlyLeuLysAsnAspAspAspThrSerLeuGlyLysGlnThrGluLysMetGluLysTyrPhe-62  
 65-AlaGlyAsnLysLysMetAsnAlaAlaProGlyAla-76  
 84-LeuSerArgSerGlyAspLysGluGlyAlaPheArgGlnPheGluGluGluLysArgLeuPheProGlu-106  
 115-MetLysThrGlyLysGlyGlyLysArg-123

**Hydrophilic Regions - Hopp-Woods**

40-ValTyrGluGlyLeuLysAsnAspAspThrSerLeuGlyLysGlnThrGluLysMetGluLysTyrPhe-62  
 65-AlaGlyAsnLysLysMetAsnAla-72  
 86-ArgSerGlyAspLysGluGlyAlaPheArgGlnPheGluGluGluLysArgLeuPhePro-105  
 115-MetLysThrGlyLysGlyGlyLysArg-123  
**a734**  
**AMPHI Regions - AMPHI**  
 19-ArgAlaAlaAspThrTyr-24  
 26-TyrLeuAlaValTrpGlnAsnProGlnAsnAlaAsnAspValLeuGlnVal-42  
 53-GluAlaPheAlaGluLeuGluAlaPheCysLys-63  
 77-ThrGlyCysArgSerValValSer-84  
 92-LeuAlaTyrProLysAlaLeuGlyAlaMetArg-102  
 113-ArgPheThrSerVal-117  
 119-GlnValAlaLeuAsnGlnCysIleLysLys-128

**Antigenic Index - Jameson-Wolf**

18-AlaArgAlaAlaAsp-22  
 31-GlnAsnProGlnAsnAlaAsnAsp-38  
 43-LysThrThrLysGluAspSerThrLysSerGluAlaPheAlaGlu-57  
 60-AlaPheCysLysGlyGlnAspThr-67  
 71-IleAlaGluAspGluProThrGlyCysArgSer-81  
 101-MetArgValGluAsn-105  
 125-CysIleLysLysTyrGlyAlaGlnGly-133  
 145-SerSerTyrTyrGly-149

**Hydrophilic Regions - Hopp-Woods**

18-AlaArgAlaAlaAsp-22  
 43-LysThrThrLysGluAspSerThrLysSerGluAlaPheAlaGlu-57  
 60-AlaPheCysLysGlyGlnAspThr-67  
 71-IleAlaGluAspGluProThrGlyCys-79  
 101-MetArgValGluAsn-105  
 125-CysIleLysTyrGlyAla-131  
**a735**

**AMPHI Regions - AMPHI**

6-LeuLeuAlaAsnAsn-10  
 12-GlnProIleAlaIleIleAla-18  
 61-TyrAlaArgGluLeuGlu-66  
 118-GlyCysIleAspGlyPheGly-124

**Antigenic Index - Jameson-Wolf**

28-HisHisGlnGlyTyrLysSerAlaPheAlaLysGln-39  
 41-AlaValIleGluLysMetLysArgAspLysAlaGln-52  
 60-AsnTyrAlaArgGluLeuGluGlnAlaArgAlaGluAlaLysLysTyrGluValLysAla-79  
 86-LeuAlaLysGlnAlaGluValSerArgLeuLysThrGluAsnLysLysGluIleGluAsn-106  
 108-LeuThrGlnAspArgLysAsnAlaGlyGlyCysIleAspGlyPheGly-124

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135-LeuGlyTyrGlyAsn-139

**Hydrophilic Regions - Hopp-Woods**

41-AlaValIleGluLysMetLysArgAspLysAlaGln-52  
 60-AsnTyrAlaArgGluLeuGlnAlaArgAlaGluAlaLysLysTyrGluValLysAla-79  
 86-LeuAlaLysLysGlnAlaGluValSerArgLeuLysThrGluAsnLysLysGluIleGluAsn-106  
 108-LeuThrGlnAspArgLysAsnAlaGly-116

**a736****AMPHI Regions - AMPHI**

13-GlyLeuIleGlnSerLeuGlySer-20  
 50-GlyValLeuSerVal-54  
 61-GlyLeuPheValGly-65  
 70-LeuGlnGlyTyrThrGlnLeuSerLysPheLysSerAlaAspIle-84  
 93-LeuLeuArgGluLeuArgProVal-100  
 120-LeuMetLysThrThrGluGlnLeuGluAlaMetAsnValMet-133  
 135-ValAsnProValAlaArgValVal-142  
 144-ProArgPheTrpAlaGlyValPheSerMetPro-154  
 156-LeuAlaSerIlePheAsnValAlaGlyIlePheGlyAla-168  
 196-AspValIleAsnGlyLeu-201  
 230-LeuArgAlaSerThrArgThr-236

**Antigenic Index - Jameson-Wolf**

37-ValArgProArgLeuSerVal-43  
 77-SerLysPheLysSer-81  
 93-LeuLeuArgGluLeuGly-98  
 109-SerAlaGlyGlyAlaMetThrSer-116  
 122-LysThrThrGluGlnLeuGlu-128  
 186-GlnMetGlnAsnAsn-190  
 224-ProThrSerGluGlyIleLeuArgAlaSerThr-234

**Hydrophilic Regions - Hopp-Woods**

39-ProArgLeuSerVal-43  
 77-SerLysPheLysSer-81  
 93-LeuLeuArgGluLeuGly-98  
 122-LysThrThrGluGlnLeuGlu-128

**a737****AMPHI Regions - AMPHI**

56-AlaAlaLeuAlaArgValGlyGly-63

**Antigenic Index - Jameson-Wolf**

24-AlaHisHisAspGlyHisGlyAspAspAspHisGlyHis-36  
 40-GlnHisSerLysGlnAspLysIleIleSer-49  
 51-AlaGlnAlaGluLysAlaAlaLeu-58  
 60-ArgValGlyGlyLysIleThrAspIleAspLeuGluHisAspAsnGlyArgProHisTyrAspValGluIleV  
 alLysAsnGlyGlnGluTyr-90  
 94-ValAspAlaArgThrGlyArgValIleSerSerArgArgAspAsp-108

**Hydrophilic Regions - Hopp-Woods**

27-AspGlyHisGlyAspAspAspHisGlyHis-36  
 40-GlnHisSerLysGlnAspLysIleIleSer-49  
 51-AlaGlnAlaGluLysAlaAlaLeu-58  
 61-ValGlyGlyLysIleThrAspIleAspLeuGluHisAspAsnGlyArgProHisTyr-79  
 82-GluIleValLysAsnGlyGlnGluTyr-90  
 94-ValAspAlaArgThrGlyArg-100  
 102-IleSerSerArgArgAspAsp-108

a738

**AMPHI Regions - AMPHI**

91-LeuMetAsnLeuIleTyrProGlyMetAsnAsp-101  
 139-IleGlySerLeuLeuGlnSerCysIle-147  
 228-ThrTyrIleAlaAlaIleAlaLeuIle-236  
 271-ThrIleLeuGluThrPheThrGlyIle-279  
 285-ValGluArgValalaAsnGlyGlyPheThrAspLeuProArgGlnIle-300  
 306-LeuAlaAlaPheGlnSer-311  
 316-GlyHisGlyTrpAsnSerPheAla-323  
 338-AspAsnLeuLeuSerAsnLeuPheThr-346  
 371-LeuLeuThrGlyIleAlaGlyLeuLeuLysArg-381  
 398-MetCysHisSerMetLeu-403  
 461-ArgMetValAsnAlaPheSerPro-468  
 472-AspSerAlaLysThrLeuAsnArgLys-480  
 482-AsnGluLeuArgTyrIleSer-488  
 507-LeuProGluTyrProGluThr-513  
 549-AlaLysGlnTrpMetArgAlaThr-556  
 567-TyrAlaAspGluIleArgLysLeuProVal-576  
 579-ProLeuLeuProGluLeuLeuLysAspCysLysAlaPheAlaAlaAlaPro-595

**Antigenic Index - Jameson-Wolf**

38-LeuGlnProSerProAspPheTyrHis-46  
 62-AlaGlyLysLysLeuPheAsp-68  
 123-HisTyrGlyGlnGluArgIle-129  
 154-GlyTrpGluAspThrProLeu-160  
 177-GlyGlnArgAsnAsnLeuGly-183  
 196-LeuAsnGlyGlnArgLysIleProPro-204  
 242-PheArgSerAspLysSerAsnArgArgThrIle-252  
 283-ThrAlaValGluArgValalaAsnGlyGlyPheThrAspLeuProArgGlnIleGluTrpArgLys-304  
 316-GlyHisGlyTrpAsnSerPheAla-323  
 332-GluGlnHisAsnIleHisAspAsnLeuLeu-341  
 378-LeuLeuLysArgProLeuThr-384  
 424-ProAlaGluAlaSerAspGlyIleAlaPheLysLysAlaAla-437  
 468-ProAlaThrAspAspSerAlaLysThrLeuAsnArgLysIleAsnGlu-483  
 508-ProGluTyrProGluThrGlnThrTrpAlaGlu-518  
 520-AlaThrLeuLysSerLeuLysTyrArgProHisSerAla-532  
 542-ArgGlnGlyLysValalaGluLalLysGlnTrpMet-553  
 555-AlaThrGlnSerTyr-559  
 566-ArgTyrAlaAspGluIleArgLys-573  
 584-LeuLeuLysAspCysLysAla-590  
 595-ProGlyHisProGluAlaLysProCysLys-604

**Hydrophilic Regions - Hopp-Woods**

62-AlaGlyLysLysLeuPheAsp-68  
 125-GlyGlnGluArgIle-129  
 198-GlyGlnArgLysIlePro-203  
 243-ArgSerAspLysSerAsnArgArgThrIle-252  
 283-ThrAlaValGluArgValala-289  
 300-IleGluTrpArgLys-304  
 332-GluGlnHisAsnIle-336  
 378-LeuLeuLysArgProLeuThr-384  
 425-AlaGluAlaSerAsp-429  
 431-IleGlaPheLysLysAlaAla-437  
 469-AlaThrAspAspSerAlaLysThrLeuAsnArgLysIleAsnGlu-483  
 525-LeuLysTyrArgPro-529

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542-ArgGlnGlyLysValAlaGluAlaLysGlnTrpMet-553

566-ArgTyrAlaAspGluIleArgLys-573

584-LeuLeuLysAspCysLysAla-590

596-GlyHisProGluAlaLysProCysLys-604

**a739**

**AMPHI Regions - AMPHI**

6-AsnLysProPheArgLeu-11

53-HisThrAspSerPro-57

86-ProAlaGlnProAspGlyThrAsp-93

120-ThrAspArgGlnProAspAspAlaGlyAla-129

131-AlaGluAsnThrLeu-135

**Antigenic Index - Jameson-Wolf**

1-MetAlaLysLysProAsnLysProPheArgLeuThrPro-13

39-PheAsnProAsnGlyAspLysThrLeuGlnThrGluProGlnHisThrAspSerProArgGluThrGluPhe-62

64-LeuProAsnGlyValValGlyGlnAspAlaAlaGlnProGluHisHisAlaSerSerSerAlaProAlaGlnProAspGlyThrAspGluSerGlySerGlyLeuProSerProAlaAlaProLysLysAsnArgValLysProGlnProAlaAspThrAlaGlnThrAspArgGlnProAspAspAlaGlyAlaGlnAlaGluAsnThrLeuLysGluThrProValLeuProThrAsnValProArgProGluProArgLysGluThrProGluLysGlnAlaGlnProLysGluThrProLysGluLysGluThrProLysGluAsnHisThrLysProAspThrProLysAsnThrProProLysProHisLysGluIleLeu-193

**Hydrophilic Regions - Hopp-Woods**

1-MetAlaLysLysProAsnLysProPheArgLeu-11

41-ProAsnGlyAspLysThrLeuGlnThrGluProGlnHisThrAspSerProArgGluThrGlu-61

72-AspAlaAlaGlnProGluHisHisHis-80

87-AlaGlnProAspGlyThrAspGluSerGlySer-97

103-AlaAlaProLysLysAsnArgValLysProGlnProAlaAspThrAlaGlnThrAspArgGlnProAspAspAlaGlyAlaGlnAlaGluAsnThrLeuLysGluThrPro-139

145-ValProArgProGluProArgLysGluThrProGluLysGlnAlaGlnProLysGluThrProLysGluLysGluThrProLysGluAsnHisThrLysProAspThrProLysAsnThrProProLysProHisLysGluIleLeu-193

**a740**

**Antigenic Index - Jameson-Wolf**

25-AlaAsnProProGluAspLysProGln-33

57-IleLysHisHisLeuLysGlnGluPheAspLeuLysArgGlnThr-71

**Hydrophilic Regions - Hopp-Woods**

27-ProProGluAspLysProGln-33

57-IleLysHisHisLeuLysGlnGluPheAspLeuLysArgGlnThr-71

**a741**

**AMPHI Regions - AMPHI**

30-AspIleGlyAlaValLeuAlaAspAlaLeuThrAla-41

93-SerArgPheAspPheIleArgGlnIleGlu-102

158-ThrSerPheAspLysLeuProGluGlyGlyArg-168

200-IleGluHisIleLeuLys-204

251-GlnGluValAlaGlySerAlaGlu-258

**Antigenic Index - Jameson-Wolf**

21-SerSerGlyGlyGly-25

43-LeuAspHisLysAspLysSerLeu-50

56-AspGlnSerValArgLysAsnGluLysLeuLysLeu-67

71-GlyAlaGluLysThrTyrGlyAsnGlyAspSerLeuAsnThrGlyLysLeuLysAsnAspLysValSerArgPheAspPhe-97

101-IleGluValAspGlyGlnLeu-107  
 117-ValTyrLysGlnSerHisSerAla-124  
 129-GlnThrGluGlnValGlnAspSerGluHisSerGlyLysMetValAlaLysArgGlnPheArgIleGlyAsp  
 IleAlaGlyGluHisThrSerPheAspLysLeuProGluGlyGlyArgAlaThrTyrArg-172  
 174-ThrAlaPheGlySerAspAspAlaSerGlyLysLeu-185  
 191-PheAlaAlaLysGlnGlyHisGlyLysIleGluHisLeuLysSerProGluLeuAsnVal-210  
 213-AlaAlaSerAspIleLysProAspLysLysArgHisAla-225  
 234-AsnGlnAlaGluLysGlySerTyrSer-242  
 247-GlyGlyGlnAlaGlnGluValAlaGly-255

257-AlaGluValGluThrAlaAsnGly-264

**Hydrophilic Regions - Hopp-Woods**

43-LeuAspHisLysAspLysSerLeu-50  
 57-GlnSerValArgLysAsnGluLysLeuLysLeu-67  
 71-GlyAlaGluLysThrTyrGlyAsn-78

85-GlyLysLeuLysAsnAspLysValSerArg-94

101-IleGluValAspGly-105  
 132-GlnValGlnAspSerGluHisSerGly-140

142-MetValAlaLysArgGlnPheArgIle-150

152-AspIleAlaGlyGlu-156

158-ThrSerPheAspLysLeuProGluGlyGlyArgAlaThrTyr-171  
 177-GlySerAspAspAlaSerGly-183  
 195-GlnGlyHisGlyLysIleGluHisLeuLysSerProGluLeuAsnVal-210  
 213-AlaAlaSerAspIleLysProAspLysLysArgHisAla-225  
 235-GlnAlaGluLysGlySer-240  
 249-GlnAlaGlnGluValAlaGly-255

257-AlaGluValGluThr-261

a742

**AMPHI Regions - AMPHI**

26-ArgGluValProAsp-30  
 53-AsnArgProLeuGln-57  
 66-GluAspTrpSerArgLeu-71  
 77-AsnLeuPheSerGlyPheLysHisValPheAsp-87  
 143-LysAlaLeuGluLysLeuLysAla-150  
 153-AspGluThrAlaLysGluTyrArg-160  
 234-AsnAlaAlaGlnArgPheProAsnSerLeuTyrAsp-245  
 326-ValTyrAlaGlySer-330  
 340-SerSerProLeuVal-344  
 369-ArgAsnAlaLysLysIle-374  
 422-ThrProAlaPheThrGlyPheSerGlyThrValProValTrpLysThrValLys-439  
 448-LeuTyrAsnAlaLysTyrLeuAsnThrAsn-458  
 475-LeuHisLeuLeuGlyGlyLeuHisTyr-483  
 505-PheGlnThrAlaSerSer-510  
 543-IleTyrGlySerTyrThrLysIlePheLysGlnGlnAspAsn-556  
 616-GlySerPheGlnThrValAlaLysProIleGlyLysValValSerArg-631  
 643-GluAspTrpLysValPheAlaGly-650

657-ArgTyrLysAsnAla-661  
 670-AlaLysAsnThrGly-674  
 677-ProTyrAsnPheSerAsnPheThrProValHisIle-688  
 714-ThrSerSerLeuTyrAsnIle-720  
 725-TyrGlyLeuIleAspGlyPheValArgTyr-734  
 736-LeuGlyLysHisAlaLysLeu-742  
 759-TyrAsnArgThrArgGlyAlaAsnAsnPheTyrGlyGluPro-772

**Antigenic Index - Jameson-Wolf**

6-AlaGluAlaAspAlaGlyAsp-12  
 21-MetTyrGlnLysSerArgGluValProAspPheSerGly-33  
 37-SerCysGluAsnGlnLysThrAlaProPheSerSerThrProAlaCysAsnArgProLeuGlnLeuProArgA  
 snThrTyrLeuGlyLysAspTrpSerArgLeuSerAlaAspLysTyrAsn-77  
 86-PheAspAsnGlyTrp-90  
 97-SerTyrThrLysAsnGluSerAspAlaLysVal-107  
 120-LeuSerAspGluAspAla-125  
 130-ThrGluLysAsnGluValIleProPheGluProLysAlaLeuGluLysLeuLysAlaTyrArgAsp  
 GluThrAlaLysTyrArgGlyLysAspAspPheValLysAsnArgPheAspAsnThrAla-175  
 177-GluGlnTyrArgSerArgArgAlaAlaGluArgLysAlaGlyPheAspGluCysMet-195  
 205-CysGlnGlySerTrpGlyAspProGlyValAspAlaAspLysSerGluPheValAsp-223  
 235-AlaAlaLysGlyPheProAsnSerLeuTyrAspSerSerPheAsnArgLysAlaThrAlaAsnArgArgTyr  
 SerTyrMetPro-262  
 264-ArgHisThrLysAspAspArgGlnTrp-272  
 286-GlyArgGluHisAsp-290  
 295-TyrAlaTyrGlyAspGluLysIleArgSerGluTyr-306  
 308-GluIleTyrGluArgArgHisArgValArgProAsnThrGlyAla-322  
 331-CysGlnGlyGluProAspGlyAspLeuSer-340  
 345-ArgGlyHisLysGluProAspTrpGlnAlaTyrAspGluLysGlyAsnArgThrValTyrAlaGluGluCys  
 ArgAsnAlaLysLysIleTyrGluProLysLeuAspAlaGluGlyLysGln-386  
 389-TyrTyrAspGluTyrSerGlySerArgThr-398  
 405-TyrGluLeuAspGluLysGlyAsnLysIleGlnGluThrAsnProAspGlyThrPro-423  
 439-LysValAlaAspAspHisVal-445  
 454-TyrLeuAsnThrAsnLysThrHis-461  
 485-ArgTyrGluThrSerGlnThrLysAspMetProValArgTyrGlyGlnProAlaSerAspPheGlnThr-50  
 7  
 509-SerSerIleLysAlaAspGlnAspHisTyrThr-519  
 521-LysMetGlnGlyHisLysLeuThrPro-529  
 545-GlySerTyrThrLys-549  
 551-PhelysGlnGlnAspAsnValAspValSerAla-561  
 584-GlyArgLeuAsnAla-588  
 595-LeuGluGlnLysAsnArgThrValVal-603  
 610-GlyAlaGlyGlyLysGlnGlySer-617  
 628-ValValSerArgGlyAlaGluPheGluLeuSerGlyGluLeuAsnGluAspTrpLys-646  
 652-ThrTyrAsnLysSerArgTyrLysAsnAlaAlaGluValAsnAlaGluArgLeuAlaLysAsnThrGlyAla  
 AspProTyrAspSerAsn-682  
 708-ValSerAlaGlnSerGlyThrSerSerLeuTyrAsnIleArgGlnGlyGly-724  
 735-GluLeuGlyLysHisAlaLys-741  
 746-GlyThrAsnLeuAsnGlyArgThrTyrPheGluAsnAsnTyrAsnArgThrArgGlyAlaAsnAsnPheTyr  
 GlyGluProArgThrValSerMet-777

**Hydrophilic Regions - Hopp-Woods**

6-AlaGluAlaAspAlaGlyAsp-12  
 23-GlnLysSerArgGluValProAsp-30  
 67-AspTrpSerArgLeuSerAlaAspLys-75  
 97-SerTyrThrLysAsnGluSerAspAlaLysVal-107

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120-LeuSerAspGluAspAla-125  
 130-ThrGluLysAsnGluValIleProPheGluProLysAspLysAlaLeuGluLysLeuLysAlaTyrArgAsp  
 GluThrAlaLysGluTyrArgGluArgLysAspAspPheValLysAsnArgPheAspAsnThrAla-175  
 177-GluGlnTyrArgSerArgArgAlaGluArgLysAlaGlyPheAspGluCysMet-195  
 212-ProGlyValAspAlaAspLysSerGluPheValAsp-223  
 247-SerPheAsnArgLysAlaThrAlaAsnArgArgTyrSer-259  
 264-ArgHisThrLysAspAspArgGlnTrp-272  
 286-GlyArgGluHisAsp-290  
 297-TyrGlyAspGluLysIleArgSerGluTyr-306  
 308-GluIleTyrGluArgArgHisArgValArgProAsnThr-320  
 331-CysGluGlyGluProAspGlyAspIeu-339  
 345-ArgGlyHisLysGluProAsp-351  
 354-AlaTyrAspGluLysGlyAsnArg-361  
 363-ValTyrAlaGluGluCysArgAsnAlaLysLysIleLysThrGluProLysLeuAspAlaGluGlyLysGln-386  
 393-TyrSerGlySerArg-397  
 405-TyrGluLeuAspGluLysGlyAsnLysIleGlnGluThrAsnProAspGly-421  
 439-LysValAlaAspAspHisVal-445  
 485-ArgTyrGluThrSerGlnThrLysAspMetProVal-496  
 500-GlnProAlaSerAsp-504  
 509-SerSerIleLysAlaAspGlnAspHisTyrThr-519  
 551-PheLysGlnGlnAspAsnValAspValSerAla-561  
 597-GlnLysAsnArgThrValVal-603  
 611-AlaGlyGlyLysGlnGlySer-617  
 628-ValValSerArgGlyAlaGluPheGluLeuSerGlyGluLeuAsnGluAspTrpLys-646  
 654-AsnLysSerArgTyrLysAsnAlaAlaGluValAsnAlaGluArgLeuAlaLys-671  
 735-GluLeuGlyLysHisAlaLys-741  
 758-AsnTyrAsnArgThrArgGly-764  
 770-GlyGluProArgThrValSerMet-777  
**a743**  
**AMPHI Regions - AMPHI**  
 19-TyrGlyGlySerPhe-23  
 58-SerTyrThrIleAsp-62  
 64-MetSerThrAlaThrGly-69  
 96-ThrLeuGluAlaMetLysAsnThrThrGlyValAsnValValArgAsp-112  
 158-ValTyrAspHisIleGluValValArgGlyAlaThrGly-170

**Antigenic Index - Jameson-Wolf**  
 1-MetAsnGlnAsnHis-5  
 30-ValSerAspGlyAsnThrVal-36  
 41-ValAsnValArgGlySerHisAlaLeuSerGlyLysThrGluLysThrArgSerTyrThrIleAspArgMetS  
 erThr-66  
 72-IleAlaGlyLysAspThrProGlnSer-80  
 85-ThrArgSerArgLeuAspAspLysAlaValHisThrLeuGluGluAlaMetLysAsnThrThrGly-106  
 109-ValValArgAspSerGlyLeuGlnThrArgPheLeuSerArgGlyPhe-124  
 128-GlnIleGlyGluAspGlyIle-134  
 140-GlyArgSerGlyTyrThrAlaLysIleAspValSerProSerThrAsp-155  
 163-GluValValArgGlyAlaThrGlyLeuThrGlnSerAsnSerGluProGlyGly-180  
 184-LeuIleArgLysArg-188

**Hydrophilic Regions - Hopp-Woods**  
 49-LeuSerGlyLysThrGluLysThrArgSerTyrThrIleAspArgMetSerThr-66  
 72-IleAlaGlyLysAspThrProGln-79  
 85-ThrArgSerArgLeuAspAspLysAlaValHisThrLeuGluGluAlaMetLysAsn-103  
 109-ValValArgAspSerGlyLeu-115

-608-

128-GlnIleGlyGluAspGlyIle-134  
 174-SerAsnSerGluProGlyGly-180  
 184-LeuIleArgLysArg-188  
**a746**  
**AMPHI Regions - AMPHI**  
 10-LeuSerGlyTyrGluGlnLeuLys-17  
 42-LeuSerSerGlyProAlaGluGlnThrAla-51  
 72-SerAlaAlaAspLysProGlnAsp-79  
 94-SerGluProGluAsn-98  
 118-LeuGluAlaSerGluLysLeuGlnGlnAlaGluThrAlaLysThrAlaPro-134  
 153-AspThrValAlaValGlu-158  
 160-ProLysArgThrAlaGluThr-166  
 170-LysAlaGluArgThr-174  
 184-ThrLysThrAlaGluLysValAlaAspLysProLys-195  
 210-SerAlaValLysGluAlaLysLysAlaAspLysAlaGluSer-223  
 238-GluThrAlaGlnLysThrAspLysAlaAspLysThrLysThrAlaGluLys-254  
 287-SerThrIleThrGluIleMetThr-294  
 307-TyrLysAsnAlaArgAspAlaGluArgAspLeu-317

**Antigenic Index - Jameson-Wolf**  
 1-MetSerGluAsnLysGlnAsnGluValLeuSerGlyTyrGluGlnLeuLysArgArgAsnArgArgArgLeuVa  
 lThr-26  
 43-SerSerGlyProAlaGluGlnThrAlaGlyGluThrSerGlyValGluAsnLysAlaAlaGly-63  
 72-SerAlaAlaAspLysProGlnAspLeuAlaGlyGluAspLysProSerAlaAlaAspSerGluIleSerGluP  
 roGluAsnVal-99  
 107-AsnAspArgLeuGluAspSerAsnIleLysGlyLeuGluAlaSerGluLysLeuGlnGlnAlaGluThrAla  
 LysThrAlaProLysGlnAlaLysGlnArgAlaAlaGluLysValProAlaThrAlaAspSerThrAspThrValA  
 lAlaValGluLysProLysArgThrAlaGluThrLysProGlnLysAlaGluArgThrAlaLysAlaLysProLysAl  
 aLysGluThrLysThrAlaGluLysValAlaAspLysProLysThrAlaAlaGluLysThrLysProAspThrAla  
 LysSerAspSerAlaValLysGluAlaLysLysAlaAspLysAlaGluSerLysLysThrAlaGluLysAspArgS  
 erAspGlyLysLysHisGluThrAlaGlnLysThrAspLysAlaAspLysThrLysThrAlaGluLysGluLysSe  
 rGlyLysLysAlaAla-262  
 266-GlyTyrAlaGluLysGluArgAlaLeuSerLeuGlnArgLysMetLysAlaAlaGlyIle-285  
 292-IleMetThrAspAsnGlyLysValTyrArgValLysSerSerAsnTyrLysAsnAlaArgAspAlaGluArg  
 AspLeuAsnLysLeuArgVal-322

**Hydrophilic Regions - Hopp-Woods**  
 1-MetSerGluAsnLysGlnAsnGluVal-9  
 14-GluGlnLeuLysArgArgAsnArgArgArgLeuVal-25  
 45-GlyProAlaGlnThrAlaGlyGluThrSerGlyValGluAsnLysAlaAlaGly-63  
 72-SerAlaAlaAspLysProGlnAspLeuAlaGlyGluAspLysProSerAlaAlaAspSerGluIleSerGluP  
 roGluAsnVal-99  
 108-AspArgLeuGluAspSerAsnIleLysGlyLeuGluAlaSerGluLysLeuGlnGlnAlaGluThrAlaLys  
 ThrAlaProLysGlnAlaLysGlnArgAlaAlaGluLysValProAlaThrAlaAspSerThrAsp-153  
 155-ValAlaValGluLysProLysArgThrAlaGluThrLysProGlnLysAlaGluArgThrAlaLysAlaLys  
 ProLysAlaLysGluThrLysThrAlaGluLysValAlaAspLysProLysThrAlaAlaGluLysThrLysProA  
 spThrAlaLysSerAspSerAlaValLysGluAlaLysLysAlaAspLysAlaGluSerLysLysThrAlaGluLys  
 sAspArgSerAspGlyLysLysHisGluThrAlaGlnLysThrAspLysAlaAspLysThrLysThrAlaGluLys  
 GluLysSerGlyLysLysAlaAla-262  
 267-TyrAlaGluLysGluArgAlaLeuSerLeuGlnArgLysMetLysAlaAlaGlyIle-285  
 292-IleMetThrAspAsnGlyLysValTyrArgValLysSerSerAsnTyrLysAsnAlaArgAspAlaGluArg  
 AspLeuAsnLysLeuArgVal-322  
**a747**  
**AMPHI Regions - AMPHI**  
 28-ValSerLysSerAlaLysGlyTrp-35

**Antigenic Index - Jameson-Wolf**

8-TyrAlaAspLeuArgGlyLysThrLysVal-17  
 23-CysAlaSerArgAspValSerLysSerAlaLysGlyTrp-35  
 42-AsnValGlyLysGlnLeuThrAspSerValGlyLeuGluPheAspProTyrTyrArgHisLysThrIleCysL  
 ysProArgGluIleValLeuAspGlyAspLysThrLysMetGlyArgSerLysSerAsnGluTyrGly-88  
 97-SerGlnLeuLysSerLys-102

**Hydrophilic Regions - Hopp-Woods**

8-TyrAlaAspLeuArgGlyLysThrLysVal-17  
 23-CysAlaSerArgAspValSerLysSerAlaLys-33  
 63-ThrIleCysLysProArgGluIleValLeuAspGlyAspLysThrLysMetGlyArgSerLysSerAsnGluT  
 yr-87  
 a748

**AMPHI Regions - AMPHI**

22-GlyAlaValGlyAlaIleGlyGly-29  
 40-AlaGluArgThrAlaGluSerGlnHis-48  
 82-SerAlaLysGlnLeuGluAsnLeuPheArgThrLeu-93  
 155-LeuGlnGluMetArgAspPheSerAsnAspLysLeuGlnLysSerTrp-170  
 188-GlnAlaAlaLeuArgAspIleIleLysHisThrValGln-200  
 250-GlyValAlaAlaAsnSer-255  
 257-AspGluProGluTrp-261  
 268-GlnAlaValArgLeuIleArgHisPheValGluPheTrpAspArg-282  
 310-GlnProAspPheAlaLys-315  
 334-ArgAspProGluPheLeu-339  
 390-LeuGluGluTyrIleSerProPhe-397

**Antigenic Index - Jameson-Wolf**

1-MetSerLysAsnGlnProAlaGlnProThrArgArgThrLeuPhe-15  
 29-GlyTyrLeuGlyGlyLysLysArgGlyGluThrAlaGluArgThrAlaGluSerGlnHisSerProGlnAla-  
 52  
 80-AlaGlnSerAlaLysGlnLeuGluAsn-88  
 101-ThrGlnGlyGlyGluTyrGlnAspGlyAspAspLysLeuProProAlaGlySerGly-119  
 125-PheAsnProAspGlyLeuThr-131  
 139-SerLeuPheAspGlyArgPheGlyLeuLysAspLysLysProIleHis-154  
 156-GlnGluMetArgAspPheSerAsnAspLysLeuGlnLysSerTrpCysAspGlyAspLeuSer-176  
 183-ThrProGluThrCys-187  
 208-IleAspGlyTrpGlnProLysSerGluProGlyAlaMetAla-221  
 226-LeuGlyPheArgAspGlyThrGlyAsnProLysValSerAspProLysThrAlaAspGlu-245  
 255-SerLeuAspGluProGluTrpAlaLysAsnGlySerTyrGlnAla-269  
 279-PheTrpAspArgThrProLeuGlnGluThrAspIlePheGlyArgArgLysTyrSerGlyAlaProMet  
 AspGlyLysLysGluAlaAspGlnProAspPheAlaLysAspProGluGlyAsnThrThrProLysAspSerHisI  
 leArgLeuAlaAsnProArgAspProGluPheLeuLysLysHisArgLeuPheArg-346  
 348-AlaTyrSerTyrSerArgGlyLeuAlaSerSerGlyGlnLeu-361  
 385-LeuAsnGlyGluProLeuGluGluTyr-393  
 406-ProGlyValGluLysGlyGlyPhe-413

**Hydrophilic Regions - Hopp-Woods**

1-MetSerLysAsnGlnPro-6  
 8-GlnProThrArgArgThrLeuPhe-15  
 32-GlyGlyLysLysArgGlyGluThrAlaGluArgThrAlaGluSerGlnHis-48  
 80-AlaGlnSerAlaLysGlnLeuGluAsn-88  
 104-GlyGluTyrGlnAspGlyAspAspLysLeuProPro-115  
 145-PheGlyLeuLysAspLysLysProIleHis-154  
 156-GlnGluMetArgAspPheSerAsnAspLysLeuGlnLysSerTrpCysAspGlyAspLeu-175

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211-TrpGlnProLysSerGluProGlyAlaMetAla-221  
 229-ArgAspGlyThrGlyAsnProLysValSerAspProLysThrAlaAsp-244  
 255-SerLeuAspGluProGluTrpAlaLys-263  
 283-ThrProLeuGlnGluGlnThrAspIlePheGlyArgArgLysTyrSer-298  
 301-ProMetAspGlyLysGluAlaAspGlnProAspPheAlaLysAspProGluGlyAsnThrThrProLys  
 AspSerHisIle-328  
 331-AlaAsnProArgAspProGluPheLeuLysLysHisArgLeuPheArg-346  
 388-GluProLeuGluGluTyr-393  
 407-GlyValGluLysGlyGly-412  
**a749**

**AMPHI Regions - AMPHI**

1-MetArgLysPheAsnLeuThrAlaLeuSerValMetLeuAlaLeuGlyLeuThrAlaCysGlnProProGluAl  
 aGluLysAlaAlaProAlaAlaSerGlyGluAlaGlnThrAlaAsnGluGlySerValSerIleAlaValAsn  
 AspAsnAlaCysGluProMetGluLeuThrValProSerGlyGlnValValPheAsnIleLysAsnAsnSerGlyA  
 rgLysLeuGluTrpGluIleLeuLysGluValMetValAspGluArgGluAsnIleAlaProGlyLeuSerAs  
 pLysMetThrValThrLeuLeuProGlyGluTyrGluMetThrCysGlyLeuLeuThrAsnProArgGlyLysLeu  
 ValValThrAspSerGlyPheLysAspThrAlaAsnGluLeuAlaLysThrLysThrPheThrGluAlaValLysAlaG  
 yAspIleGluLysAlaLysSerLeuPheAlaAspThrArgValHisTyrGluArgIleGluProIleAlaGluLeu  
 PheSerGluLeuAspProValIleAspAlaArgGluAspAspPheLysAspGlyAlaLysAspAlaGlyPheThrG  
 lyPheHisArgIleGluTyrAlaLeuTrpValGluLysAspValSerGlyValLysGluIleAlaAlaLysLeuMe  
 tThrAspValGluAlaLeuGlnGlyGluIleAspAlaLeuAlaPheProProGlyLysValValGlyGlyAlaSer  
 GluLeuIleGluGluValAlaGlySerLysIleSerGlyGluGluAspArgTyrSerHisThrAspLeuSerAsP  
 heGlnAlaAsnValAspGlySerLysIleValAspLeuPheArgProLeuIleGluThrLysAsnLysAlaLe  
 uLeuGluLysThrAspThrAsnPhelysGlnValAsnGluIleLeuAlaLysTyrArgThrLysAspGlyPheGlu  
 ThrTyrAspLysLeuGlyGluAlaAspArgLysAlaLeuGlnAlaSerIleAsnAlaLeuAlaGluAspLeuAlaG  
 lnLeuArgGlyIleLeuGlyLeuLys-388

**Antigenic Index - Jameson-Wolf**

1-MetArgLysPheAsnLeuThrAlaLeuSerValMetLeuAlaLeuGlyLeuThrAlaCysGlnProProGluAl  
 aGluLysAlaAlaProAlaAlaSerGlyGluAlaGlnThrAlaAsnGluGlySerValSerIleAlaValAsn  
 AspAsnAlaCysGluProMetGluLeuThrValProSerGlyGlnValValPheAsnIleLysAsnAsnSerGlyA  
 rgLysLeuGluTrpGluIleLeuLysGluValMetValAspGluArgGluAsnIleAlaProGlyLeuSerAs  
 pLysMetThrValThrLeuLeuProGlyGluTyrGluMetThrCysGlyLeuLeuThrAsnProArgGlyLysLeu  
 ValValThrAspSerGlyPheLysAspThrAlaAsnGluAlaAspLeuGluLysLeuSerGlnProLeuAlaAspT  
 yrLysAlaTyrValGlnGlyGluValLysGluLeuValAlaLysThrLysThrPheThrGluAlaValLysAlaG  
 yAspIleGluLysAlaLysSerLeuPheAlaAspThrArgValHisTyrGluArgIleGluProIleAlaGluLeu  
 PheSerGluLeuAspProValIleAspAlaArgGluAspAspPheLysAspGlyAlaLysAspAlaGlyPheThrG  
 lyPheHisArgIleGluTyrAlaLeuTrpValGluLysAspValSerGlyValLysGluIleAlaAlaLysLeuMe  
 tThrAspValGluAlaLeuGlnGlyGluIleAspAlaLeuAlaPheProProGlyLysValValGlyGlyAlaSer  
 GluLeuIleGluGluValAlaGlySerLysIleValAspLeuPheArgProLeuIleGluThrLysAsnLysAlaLe  
 uLeuGluLysThrAspThrAsnPhelysGlnValAsnGluIleLeuAlaLysTyrArgThrLysAspGlyPheGlu  
 ThrTyrAspLysLeuGlyGluAlaAspArgLysAlaLeuGlnAlaSerIleAsnAlaLeuAlaGluAspLeuAlaG  
 lnLeuArgGlyIleLeuGlyLeuLys-388

**Hydrophilic Regions - Hopp-Woods**

1-MetArgLysPheAsnLeuThrAlaLeuSerValMetLeuAlaLeuGlyLeuThrAlaCysGlnProProGluAl  
 aGluLysAlaAlaProAlaAlaSerGlyGluAlaGlnThrAlaAsnGluGlySerValSerIleAlaValAsn  
 AspAsnAlaCysGluProMetGluLeuThrValProSerGlyGlnValValPheAsnIleLysAsnAsnSerGlyA  
 rgLysLeuGluTrpGluIleLeuLysGluValMetValAspGluArgGluAsnIleAlaProGlyLeuSerAs  
 pLysMetThrValThrLeuLeuProGlyGluTyrGluMetThrCysGlyLeuLeuThrAsnProArgGlyLysLeu  
 ValValThrAspSerGlyPheLysAspThrAlaAsnGluAlaAspLeuGluLysLeuSerGlnProLeuAlaAspT  
 yrLysAlaTyrValGlnGlyGluValLysGluLeuValAlaLysThrLysThrPheThrGluAlaValLysAlaG  
 yAspIleGluLysAlaLysSerLeuPheAlaAspThrArgValHisTyrGluArgIleGluProIleAlaGluLeu

-611-

PheSerGluLeuAspProValIleAspAlaArgGluAspPheLysAspGlyAlaLysAspAlaGlyPheThrGlyPheHisArgIleGluTyrAlaLeuTrpValGluLysAspValSerGlyValLysGluIleAlaAlaLysLeuMetThrAspValGluAlaLeuGlnLysGluIleAspAlaLeuAlaPheProProGlyLysValValGlyGlyAlaSerGluLeuIleGluGluValAlaGlySerLysIleSerGlyGluGluAspArgTyrSerHisThrAspLeuSerAspPheGlnAlaAsnValAspGlySerLysIleValAspLeuPheArgProLeuIleGluThrLysAsnLysAlaLeuLeuGluLysThrSpThrAsnPhetLysGlnValAsnGluIleLeuAlaLysTyrArgThrLysaspGlyPheGluThrTyrAspLysLeuGlyGluAlaAspArgLysAlaLeuGlnAlaSerIleAsnAlaLeuAlaGluAspLeuAlaGlnLeuArgGlyIleLeuGlyLeuLys-388

a750

**AMPHI Regions - AMPHI**

1-ValLysProArgPheTyrTrpAlaAlaCysAlaValLeuLeuThrAlaCysSerProGluProAlaAlaGluLysThrValSerAlaAlaSerAlaSerAlaAlaThrLeuThrValProThrAlaArgGlyAspAlaValValProLysAsnProGluArgValAlaValTyrAspTrpAlaAlaLeuAspThrLeuThrGluLeuGlyValAsnValGlyAlaThrThrAlaProValArgValAspTyrLeuGlnProAlaPheAspLysAlaAlaThrValGlyThrLeuPheGluProAspTyrGluAlaLeuHisArgTyrAsnProGlnLeuValIleThrGlyGlyProGlyAlaGluAlaTyrGluGlnLeuAlaLysAsnAlaThrThrIleAspLeuThrValAspAsnGlyAsnIleArgThrSerGlyGluLysGlnMetGluThrLeuAlaArgIlePheGlyLysGluAlaArgAlaGluLeuLysAlaGlnIleAspAlaLeuPheAlaGlnThrArgGluAlaAlaLysGlyLysGlyArgGlyLeuValLeuSerValThrGlyAsnLysValSerAlaPheGlyThrGlnSerArgLeuAlaSerTrpIleHisGlyAspIleGlyLeuProProValAspGluSerLeuArgAsnGluGlyHisGlyGlnProValSerPheGluTyrIleLysGluLysAsnProAspTrpIlePheIleIleAspArgThrAlaAlaIleGlyGlnGluGlyProAlaAlaValGluValLeuAspAsnAlaLeuValArgGlyThrAsnAlaTrpLysArgLysGlnIleIleValMetProAlaAlaAsnTyrIleValAlaGlyGlySerArgGlnLeuIleGlnAlaAlaGluGlnLeuLysGluAlaPheGluLysAlaGluProValAlaAlaGlyLysGlu-321

**Antigenic Index - Jameson-Wolf**

1-ValLysProArgPheTyrTrpAlaAlaCysAlaValLeuLeuThrAlaCysSerProGluProAlaAlaGluLysThrValSerAlaAlaSerAlaSerAlaAlaThrLeuThrValProThrAlaArgGlyAspAlaValValProLysAsnProGluArgValAlaValTyrAspTrpAlaAlaLeuAspThrLeuThrGluLeuGlyValAsnValGlyAlaThrThrAlaProValArgValAspTyrLeuGlnProAlaPheAspLysAlaAlaThrValGlyThrLeuPheGluProAspTyrGluAlaLeuHisArgTyrAsnProGlnLeuValIleThrGlyGlyProGlyAlaGluAlaTyrGluGlnLeuAlaLysAsnAlaThrThrIleAspLeuThrValAspAsnGlyAsnIleArgThrSerGlyGluLysGlnMetGluThrLeuAlaArgIlePheGlyLysGluAlaArgAlaGluLeuLysAlaGlnIleAspAlaLeuPheAlaGlnThrArgGluAlaAlaLysGlyLysGlyArgGlyLeuValLeuSerValThrGlyAsnLysValSerAlaPheGlyThrGlnSerArgLeuAlaSerTrpIleHisGlyAspIleGlyLeuProProValAspGluSerLeuArgAsnGluGlyHisGlyGlnProValSerPheGluTyrIleLysGluLysAsnProAspTrpIlePheIleIleAspArgThrAlaAlaIleGlyGlnGluGlyProAlaAlaValGluValLeuAspAsnAlaLeuValArgGlyThrAsnAlaTrpLysArgLysGlnIleIleValMetProAlaAlaAsnTyrIleValAlaGlyGlySerArgGlnLeuIleGlnAlaAlaGluGlnLeuLysGluAlaPheGluLysAlaGluProValAlaAlaGlyLysGlu-321

**Hydrophilic Regions - Hopp-Woods**

1-ValLysProArgPheTyrTrpAlaAlaCysAlaValLeuLeuThrAlaCysSerProGluProAlaAlaGluLysThrValSerAlaAlaSerAlaSerAlaAlaThrLeuThrValProThrAlaArgGlyAspAlaValValProLysAsnProGluArgValAlaValTyrAspTrpAlaAlaLeuAspThrLeuThrGluLeuGlyValAsnValGlyAlaThrThrAlaProValArgValAspTyrLeuGlnProAlaPheAspLysAlaAlaThrValGlyThrLeuPheGluProAspTyrGluAlaLeuHisArgTyrAsnProGlnLeuValIleThrGlyGlyProGlyAlaGluAlaTyrGluGlnLeuAlaLysAsnAlaThrThrIleAspLeuThrValAspAsnGlyAsnIleArgThrSerGlyGluLysGlnMetGluThrLeuAlaArgIlePheGlyLysGluAlaArgAlaAlaGluLeuLysAlaGlnIleAspAlaLeuPheAlaGlnThrArgGluAlaAlaLysGlyLysGlyArgGlyLeuValLeuSerValThrGlyAsnLysValSerAlaPheGlyThrGlnSerArgLeuAlaSerTrpIleHisGlyAspIleGlyLeuProProValAspGluSerLeuArgAsnGluGlyHisGlyGlnProValSerPheGluTyrIleLysGluLysAsnProAspTrpIlePheIleIleAspArgThrAlaAlaIleGlyGlnGluGlyProAlaAlaValGluValLeuAspAsnAlaLeuValArgGlyThrAsnAlaTrpLysArgLysGlnIleIleValMetProAlaAlaAsnTyrIleValAlaGlyGlySerArgGlnLeuIleGlnAlaAlaGluGlnLeuLysGluAlaPheGluLysAlaGluProValAlaAlaGlyLysGlu-321

a756

**AMPHI Regions - AMPHI**

-612-

1-MetThrAlaAsnPheAlaGlnThrLeuValGluIleGlnAspSerLeuXxxArgValValSerThrValGlnTr  
rGlyAspAspAsnLeuLysArgLeuThrAlaAspLysArgLysGlnTyrGluLeuAsnPhelysIleSerGluGly  
SerThrArgValGluSerAspPheLysGluThrLeuValArgPheGlyArgAspMetLeuGlnAspMetProProL  
ysIleArgSerAlaThrLeuValAlaLeuThrLeuLeuValGlyGlyAlaLeuGlyTyrGlyTyrLeuGluTy  
rLeuLysGlnValAlaSerGluGlyTyrGlnThrGluArgLeuTyrAsnAlaValAspArgLeuAlaGluSerGln  
GluArgIleThrSerAlaIleLeuLysGlyAlaArgGlyAlaAspPheValGlnIleGlyIrgArgSerTyrSerA  
rgGluAspIleSerGluAlaAsnArgArgAlaGluArgValProTyrGlyAlaGluLeuValSerAspGlyAsnPh  
eThrAlaValLeuSerAspIleGlyAsp-186

**Antigenic Index - Jameson-Wolf**

1-MetThrAlaAsnPheAlaGlnThrLeuValGluIleGlnAspSerLeuXxxArgValValSerThrValGlnTr  
rGlyAspAspAsnLeuLysArgLeuThrAlaAspLysArgLysGlnTyrGluLeuAsnPhelysIleSerGluGly  
SerThrArgValGluSerAspPheLysGluThrLeuValArgPheGlyArgAspMetLeuGlnAspMetProProL  
ysIleArgSerAlaThrLeuValAlaLeuThrLeuLeuValGlyGlyAlaLeuGlyTyrGlyTyrLeuGluTy  
rLeuLysGlnValAlaSerGluGlyTyrGlnThrGluArgLeuTyrAsnAlaValAspArgLeuAlaGluSerGln  
GluArgIleThrSerAlaIleLeuLysGlyAlaArgGlyAlaAspPheValGlnIleGlyIrgArgSerTyrSerA  
rgGluAspIleSerGluAlaAsnArgArgAlaGluArgValProTyrGlyAlaGluLeuValSerAspGlyAsnPh  
eThrAlaValLeuSerAspIleGlyAsp-186

**Hydrophilic Regions - Hopp-Woods**

1-MetThrAlaAsnPheAlaGlnThrLeuValGluIleGlnAspSerLeuXxxArgValValSerThrValGlnTr  
rGlyAspAspAsnLeuLysArgLeuThrAlaAspLysArgLysGlnTyrGluLeuAsnPhelysIleSerGluGly  
SerThrArgValGluSerAspPheLysGluThrLeuValArgPheGlyArgAspMetLeuGlnAspMetProProL  
ysIleArgSerAlaThrLeuValAlaLeuThrLeuLeuValGlyGlyAlaLeuGlyTyrGlyTyrLeuGluTy  
rLeuLysGlnValAlaSerGluGlyTyrGlnThrGluArgLeuTyrAsnAlaValAspArgLeuAlaGluSerGln  
GluArgIleThrSerAlaIleLeuLysGlyAlaArgGlyAlaAspPheValGlnIleGlyIrgArgSerTyrSerA  
rgGluAspIleSerGluAlaAsnArgArgAlaGluArgValProTyrGlyAlaGluLeuValSerAspGlyAsnPh  
eThrAlaValLeuSerAspIleGlyAsp-186

a758

**AMPHI Regions - AMPHI**

1-MetAsnAsnLeuThrValPheThrArgPheAspThrAspLeuAlaThrLeuAlaAspGluLeuGlnTyrValTr  
pGluHisThrAlaValThrAspHisGlnGlyLysLeuValGluIleProValCysTyrGlyGluTyrGlyPro  
AspLeuAlaGluValAlaAlaPheHisGlnThrValIleSerGluIleValArgArgHisThrAlaGlnThrTyrT  
hrValPheMetMetGlyPheGlnProGlyPheProTyrLeuGlyGlyLeuProGluAlaLeuHisThrProArgAr  
gAlaValProArgThrSerValProAlaGlySerValGlyIleGlyGlySerGlnThrGlyValTyrProPheAla  
SerProGlyGlyTrpGlnIleIleGlyArgThrGluLeuProLeuPheArgAlaAspLeuAsnProProThrLeuL  
euAlaAlaGlyAspGlnValArgPheValAlaGluArgIleGluPro-167

**Antigenic Index - Jameson-Wolf**

1-MetAsnAsnLeuThrValPheThrArgPheAspThrAspLeuAlaThrLeuAlaAspGluLeuGlnTyrValTr  
pGluHisThrAlaValThrAspHisGlnGlyLysLeuValGluIleProValCysTyrGlyGlyGluTyrGlyPro  
AspLeuAlaGluValAlaAlaPheHisGlnThrValIleSerGluIleValArgArgHisThrAlaGlnThrTyrT  
hrValPheMetMetGlyPheGlnProGlyPheProTyrLeuGlyGlyLeuProGluAlaLeuHisThrProArgAr  
gAlaValProArgThrSerValProAlaGlySerValGlyIleGlyGlySerGlnThrGlyValTyrProPheAla  
SerProGlyGlyTrpGlnIleIleGlyArgThrGluLeuProLeuPheArgAlaAspLeuAsnProProThrLeuL  
euAlaAlaGlyAspGlnValArgPheValAlaGluArgIleGluPro-167

**Hydrophilic Regions - Hopp-Woods**

1-MetAsnAsnLeuThrValPheThrArgPheAspThrAspLeuAlaThrLeuAlaAspGluLeuGlnTyrValTr  
pGluHisThrAlaValThrAspHisGlnGlyLysLeuValGluIleProValCysTyrGlyGlyGluTyrGlyPro  
AspLeuAlaGluValAlaAlaPheHisGlnThrValIleSerGluIleValArgArgHisThrAlaGlnThrTyrT  
hrValPheMetMetGlyPheGlnProGlyPheProTyrLeuGlyGlyLeuProGluAlaLeuHisThrProArgAr  
gAlaValProArgThrSerValProAlaGlySerValGlyIleGlyGlySerGlnThrGlyValTyrProPheAla  
SerProGlyGlyTrpGlnIleIleGlyArgThrGluLeuProLeuPheArgAlaAspLeuAsnProProThrLeuL  
euAlaAlaGlyAspGlnValArgPheValAlaGluArgIleGluPro-167

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2761

**AMPHI Regions = AMPHI**

1-MetLysIleSerPheHisLeuAlaLeuLeuProThrLeuIleIleAlaSerPheProValAlaAlaAlaAspThrGlnAspAsnGlyGluHisTyrThrAlaThrLeuProThrValSerValGlyGlnAspThrSerValLeuLysGlyTyrIleAsnTyrAspGluAlaAlaValThrArgAsnGlyGlnLeuIleLysGluThrProGlnThrIleAspThrLeuAsnIleGlnLySAasnTyrGlyThrAsnAspLeuSerSerIleLeuGluGlyAsnAlaGlyIleAspAlaAlaTyrAspMetArgGlyGluSerIlePheLeuArgGlyPheGlnAlaAspAlaSerAspIleTyrArgAspGlyValArgGluSerGlyGlnValGlyArgSerThrAlaAsnIleGluArgValGluIleLeuLysGlyProSerValLeuTyrGlyArgThrAsnGlyGlyValIleAsnMetValSerLysTyrAlaAsnPhesGlnSerIleArgAsnIleGlyThrValTyrGlySerTrpAlaAsnArgSerLeuAsnMetAspIleAsnGluValLeuAsnLysAsnValAlaIleArgLeuThrGlyGluValGlyArgAlaAsnSerPheArgSerGlyIleAspSerLysAsnValMetValSerProSerIleThrValLysLeuAspAsnGlyLeuLysTrpThrGlyGlnTyrThrTyrAspAsnValGlyArgThrProAspArgSerProThrLeuSerValTyrAspArgPheGlyLeuProTyrArgMetGlyPheAlaHisArgAsnAspPheVallysAspLysLeuGlnValTrpArgSerAspLeuGluTyrAlaPheAsnAspLysTrpArgAlaGlnTrpGlnLeuAlaHisArgThrAlaAlaGlnAspHeAspHisPheTyrAlaGlySerGluAsnGlyAsnIleLeuLysArgAsnTyrAlaTrpGlnGlnThrAspAsnLysThrLeuSerSerAlaLeuAsnGlyAspTyrThrIleGlyArgPheGluAsnHisLeuThrValGlyMetAspTyrSerArgGluHisArgAsnProThrLeuGlyProheSerSerAlaPheSerAlaSerIleAsnProTyrAspArgAlaSerTrpProAlaSerGlyArgLeuLgnProIleLeuThrGlnAsnArgHisLysAlaAspSerTyrGlyIlePheValGlnAsnIlePheSerAlaThrProAspLeuLysPheValLeuGlyGlyArgTyrAspLysTyrThrPheAsnSerGluAsnLysLeuThrGlySerSerArgGlnTyrSerGlyHisSerPheSerProAsnIleGlyAlaValTrpAsnIleAsnProValIhisthLeutyrAlaSerTyrAsnLysGlyPheAlaProTyrGlyGlyArgGlyGlyTrieuSerIleAspThrLeuSerSerAlaValPheAsnAlaAspProGluTyrThrArgGlnTyrGluThrGlyValLysSerSerTrpLeuAspAspArgLeuSerThrThrLeeuSerAlaTyrGlnIleGluArgPheAsnIleArgTyrArgProAspProLysAsnAsnProTyrIleTyrAlaValSerGlyLysHisArgSerArgGlyValGluLeuSerAlaIleGlyGlnIleIleProLysLysLeuTyrLeuArgGlySerLeuGlyValMetGlnAlaValGluAsnLysProAspArgValGlyIleHisLeuAsnSerThrSerAsnValThrGlyAsnLeuPhePheArgTyrThrProThrGluAsnLeuTyrGlyGluIleGlyValThrGlyGlyLysArgTyrGlyTyrAspSerArgAsnLysGluValThrLeuProGlyPheAlaArgValAspAlaMetLeuGlyTrpAsnHisLysAsnValAsnValThrPheAlaAlaAlaAsnLeuPheAsnGlnLysTyrTrpArgSerAspSerMetProGlyAsnProArgGlyTyrThrAlaArgValSerTyrArgPhe-703

#### Antigenic Index - Jameson-Wolf

1-MetLysIleSerPheHisLeuAlaLeuLeuProThrLeuIleIleAlaSerPheProValAlaAlaAlaAspThrGlnAspAspGlyGluHisTyrThrAlaThrLeuProThrValSerValGlyGlnSerAspThrSerValLeuLysGlyTyrIleAsnTyrAspGluAlaAlaValThrArgAsnGlyGlnLeuIleLysGluThrProGlnThrIleAspThrLeuAsnIleGlnLysAsnLysAsnTyrGlyThrAsnAspLeuSerSerIleLeuGluGlyAsnAlaGlyIleAspAlaAlaTyrAspMetArgGlyGluSerIlePheLeuArgGlyPheGlnAlaAspAlaSerAspIleTyrArgAspGlyValArgGluSerGlyGlnValArgArgSerThrAlaAsnIleGluArgValGluIleLeuLysGlyProserSerValLeuTyrGlyArgThrAsnGlyGlyGlyValIleAsnMetValSerLysTyrAlaAsnPhesGlnSerIleArgAsnIleGlyThrValTyrGlySerTrpAlaAsnArgSerLeuAsnMetAspIleAsnGluValLeuAsnLysAsnValAlaIleArgLeuThrGlyGluValGlyArgAlaAsnSerPheArgSerGlyIleAspSerLysAsnValMetValSerProSerIleThrValIleLeuAspAsnGlyLeuLysTrpThrGlyGlnTyrThrTyrAspAsnValCeuArgThrProAspArgSerProThrLysSerValTyrAspArgPheGlyLeuProTyrArgMetGlyPheAlaHisArgAsnAspPhiWallysAspLyseLeuGlnValTrpArgSerAspLeuGluTyrAlaPhiAsnAspLyseTrpArgIlaGlnTrpGlnLeuAlaHisArgThrAlaIlaGlnAspPhiAspHisPhiTyrAlaGlySerGluAsnGlyAsnLeuIleLysArgAsnTyrAlaTrpGlnGlnThrAspAsnLysThrLeuSerSerAsnLeuThrLeuAsnGlyAspTyrThrIleGlyArgPheGluAsnHisLeuThrValGlyMetAspTyrSerArgGluHisArgAsnProThrLeuGlyPheHerSerAlaPhiSerAlaSerIleAsnProTyrAspArgAlaSerTrpProAlaSerGlyArgLeuGlnProIleLeuThrGlnAspArgHisIlysAlaAspSerIlePheGlyIlePheValGlnAsnIlePheSerAlaThrProAspLeuLysPheValLeuGlyGlyArgTyrAspLysTyrThrPhiAsnSerGluAsnLysLeuThrGlySerSerArgGlnTyrSerGlyHisSerPhiSerProAsnIleGlyAlaValTrpAsnIleAsnProValHisThrLeuTyrAlaSerTyrAsnLysGlyPheAlaProTyrGlyGlyArgGlyTyrLeuSerIleAspThrLeuSerSerAlaValPhiAsnAlaAspProGluTyrThrArgGlnTyrGluThrGlyValLysSerSerTrpLeuAspAspArgLeuSerThrThrLeuSerAlaTyrGlnIleGluArgPhiAsnIleArgTyrArgProAspProLyseAsnProTyrIleTyrAlaSerIleGlyLysHisIargSerArgGlyValGlyLeuSerAlaIleGlyGlnIleLeleProLysLvsLeuTyrLeuArc

-614-

GlySerLeuGlyValMetGlnAlaLysValValGluAspLysGluAsnProAspArgValGlyIleHisLeuAsnA  
snThrSerAsnValThrGlyAsnLeuPhePheArgTyrThrProThrGluAsnLeuTyrGlyGluIleGlyValTh  
rGlyThrGlyLysArgTyrGlyTyrAspSerArgAsnLysGluValThrThrLeuProGlyPheAlaArgValAsp  
AlaMetLeuGlyTrpAsnHisLysAsnValAsnValThrPheAlaAlaAlaAsnLeuPheAsnGlnLysTyrTrpA  
rgSerAspSerMetProGlyAsnProArgGlyTyrThrAlaArgValAsnTyrArgPhe-703

**Hydrophilic Regions - Hopp-Woods**

1-MetLysIleSerPheHisLeuAlaLeuLeuProThrLeuIleIleAlaSerPheProValAlaAlaAlaAspTh  
rGlnAsnGlyGluHisTyrThrAlaThrLeuProThrValSerValValGlyGlnSerAspThrSerValLeu  
LysGlyTyrIleAsnTyrAspGluAlaAlaValThrArgAsnGlyGlnLeuIleLysGluThrProGlnThrIleA  
spThrLeuAsnIleAsnLysTyrAsnGlyGlyThrAsnAspLeuSerIleLeuGluGlyAsnAlaGlyI  
lAspAlaAlaTyrAspMetArgGlyGluSerIlePheLeuArgGlyPheGlnAlaAspAlaSerAspIleTyrArg  
AspGlyValArgGluSerGlyGlnValArgArgSerThrAlaAsnIleGluArgValGluIleLeuLysGlyProS  
erSerValLeuThrGlyArgThrAsnGlyGlyValIleAsnMetValSerIleTyrAlaAsnPhelysGlnSe  
rArgAsnIleGlyThrValTyrGlySerTyrAlaAsnArgSerLeuAsnMetAspIleAsnGluValLeuAsnlys  
AsnValAlaIleArgLeuThrGlyGluValGlyArgAlaAsnSerPheArgSerGlyIleAspSerLysAsnValM  
etValSerProSerIleThrVallysLeuAspAsnGlyLeuLysTrpThrGlyGlnTyrThrTyrAspAsnValG  
uArgThrProAspArgSerProThrLysSerValTyrAspArgPheGlyLeuProTyrArgMetGlyPheAlaHis  
ArgAsnAspValLysAspLysLeuGlnValTrpArgSerAspLeuGluTyrAlaPheAsnAspLysTrpArgA  
laGlnTrpGlnLeuAlaHisArgThrAlaAlaGlnAspPheAspHisPheTyrAlaGlySerGluAsnGlyAsnLe  
uIleLysArgAsnTyrAlaTrpGlnGlnThrAspAsnLysThrLeuSerSerAsnLeuThrLeuAsnGlyAspTyr  
ThrIleGlyArgPheGluAsnHisLeuThrGlyMetAspTyrSerArgGluHisArgAsnProThrLeuGlyP  
heSerSerAlaPheSerAlaSerIleAsnProTyrAspArgAlaSerTrpProAlaSerGlyArgLeuGlnProI  
leLeuThrGlnAsnArgHisLysAlaAspSerTyrGlyIlePheValGlnAsnIlePheSerAlaThrProAspLeu  
LysPheValLeuGlyGlyArgTyrAspLysTyrThrPheAsnSerGluAsnLysLeuThrGlySerXerArgGlnT  
yrSerGlyHisSerPheSerProAsnIleGlyAlaValTrpAsnIleAsnProValHisThrLeuTyrAlaSerTy  
rAsnIysGlyPheAlaProTyrGlyGlyArgGlyTyrLeuSerSerAlaValPheAsnAlaAspProGluTyrThr  
ArgGlnTyrGlyTyrGlyValThrGlyVallysSerSerTrpLeuAspAspArgLeuSerThrThrLeu  
euSerAlaTyrGlnIleLeuArgPheAsnIleArgTyrArgProAspProLysAsnAsnProTyrIleTyrAlaVa  
lSerGlyLysHisArgSerArgGlyValGluLeuSerAlaIleGlyGlnIleIleProLysLysLeuTyrLeuArg  
GlySerLeuGlyValMetGlnAlaLysValValGluAspLysGluAsnProAspArgValGlyIleHisLeuAsnA  
snThrSerAsnValThrGlyAsnLeuPhePheArgTyrThrProThrGluAsnLeuTyrGlyGluIleGlyValTh  
rGlyThrGlyLysArgTyrGlyTyrAspSerArgAsnLysGluValThrLeuProGlyPheAlaArgValAsp  
AlaMetLeuGlyTrpAsnHisLysAsnValAsnValThrPheAlaAlaAlaAsnLeuPheAsnGlnLysTyrTrpA  
rgSerAspSerMetProGlyAsnProArgGlyTyrThrAlaArgValAsnTyrArgPhe-703

a762

**AMPHI Regions - AMPHI**

1-MetLysTrpLeuLeuAsnMetIleMetArgProIleLysPheSerMetValAsnThrLeuLeuPheIleValI  
eCysSerSerPhePheAspLeuLeuValGlnLeuCysThrIleLeuPheHisSerGlnLysIleTyrPheIleThr  
LeuPheLeuLeuPheIlePheAsnProValThrLysSerIleTyrMetAlaIleIleTyrProIleLeuTyrPheP  
heThrIleLysLysTyrTyrProTyrSerArgLysValIleIleLeuLeuSerLeuAlaLeuSerIleTyrPheSe  
rPheMetAspPheTyrPhePheSerIleTyrSerAspAsnLeuSerTyrGluThrGluProLeuHisLeuTyrIle  
ProIleIleIleAsnPhePheSerLeuLeuValSerAsnPheIleLeuSerPheIleAsnLys-147

**Antigenic Index - Jameson-Wolf**

1-MetLysTrpLeuLeuAsnMetIleMetArgProIleLysPheSerMetValAsnThrLeuLeuPheIleValI  
eCysSerSerPhePheAspLeuLeuValGlnLeuCysThrIleLeuPheHisSerGlnLysIleTyrPheIleThr  
LeuPheLeuLeuPheIlePheAsnProValThrLysSerIleTyrMetAlaIleIleTyrProIleLeuTyrPheP  
heThrIleLysLysTyrTyrProTyrSerArgLysValIleIleLeuLeuSerLeuAlaLeuSerIleTyrPheSe  
rPheMetAspPheTyrPhePheSerIleTyrSerAspAsnLeuSerTyrGluThrGluProLeuHisLeuTyrIle  
ProIleIleIleAsnPhePheSerLeuLeuValSerAsnPheIleLeuSerPheIleAsnLys-147

**Hydrophilic Regions - Hopp-Woods**

1-MetLysTrpLeuLeuAsnMetIleMetArgProIleLysPheSerMetValAsnThrLeuLeuPheIleValI  
eCysSerSerPhePheAspLeuLeuValGlnLeuCysThrIleLeuPheHisSerGlnLysIleTyrPheIleThr

-615-

LeuPheLeuLeuPheIlePheAsnPheValThrLysSerIleTyrMetAlaIleIleTyrProIleLeuTyrPheP  
heThrIleLysTyrTyrProTyrSerArgLysValIleIleLeuLeuSerLeuAlaLeuSerIleTyrPheSe  
rPheMetAspPheTyrPhePheSerIleTyrSerAspAsnLeuSerTyrGluThrGluProLeuHisLeuTyrIle  
ProIleIleAsnPhePheSerLeuLeuValSerAsnPheIleLeuSerPheIleAsnLys-147  
a763

**AMPHI Regions - AMPHI**

1-MetThrLeuLeuAsnLeuMetIleMetGlnAspPheTyrGlyIleSerValCysLeuThrLeuThrProTyrLeuGl  
nHisGluLeuPheSerAlaMetLysSerTyrPheSerLysTyrIleLeuProValSerLeuPheThrLeuProLeu  
SerLeuSerProSerValSerAlaPheThrLeuProGluAlaTrpArgAlaAlaGlnGlnHisSerAlaAspPheG  
InAlaSerHisTyrGlnArgAspAlaValArgAlaArgGlnGlnAlaLysAlaAlaPheLeuProHisValSe  
rAlaAsnHisSerTyrGlnArgAspGluLeuLeuLeuLysValAlaGluSerTyrPheAsnValLeuLeuSerArgAspTh  
rValAlaAlaHisAlaGluLysGluAlaTyrAlaGlnValArgGlnAlaGlnAlaLeuPheAsnLysGly  
AlaAlaTyrAlaLeuAspIleHisGluAlaLysAlaGlyTyrAspAsnAlaLeuAlaGlnGluIleAlaValLeuA  
laGluLysGlnThrTyrGluAsnGlnLeuAsnAspTyrThrGluAspSerLysGlnIleGluAlaIleAspTh  
rAlaAsnLeuLeuAlaArgTyrLeuProLysLeuGluArgTyrSerLeuAspGluTrpGlnArgIleAlaLeuSer  
AsnAsnHisGluTyrArgMetGlnGlnLeuAlaLeuGlnSerSerGlyGlnAlaLeuArgAlaAlaGlnAsnSerA  
rgTyrProThrValSerAlaHisValGlyTyrGlnAsnAsnLeuTyrThrSerSerAlaGlnAsnAsnAspTyrHi  
sTyrArgGlyLysGlyMetSerValGlyValGlnLeuAsnLeuProLeuTyrThrGlyGlyGluLeuSerGlyLys  
IleHisGluAlaGluAlaGlnTyrGlyAlaAlaGluAlaGlnLeuThrAlaThrGluArgHisIleLeuAlaV  
alArgGlnAlaTyrThrGluSerGlyAlaAlaArgTyrGlnIleMetAlaGlnGluArgValLeuGluSerSerAr  
gLeuLysLeuLysSerThrGluThrGlyGlnGlnTyrGlyIleArgAsnArgLeuGluValIleArgAlaArgGln  
GluValAlaGlnAlaGluGlnLysLeuAlaGlnAlaArgTyrLysPheMetLeuAlaTyrLeuArgLeuValLysG  
luSerGlyLeuGlyLeuGluThrValPheAlaGlu-467

**Antigenic Index - Jameson-Wolf**

1-MetThrLeuLeuAsnLeuMetIleMetGlnAspPheTyrGlyIleSerValCysLeuThrLeuThrProTyrLeuGl  
nHisGluLeuPheSerAlaMetLysSerTyrPheSerLysTyrIleLeuProValSerLeuPheThrLeuProLeu  
SerLeuSerProSerValSerAlaPheThrLeuProGluAlaTrpArgAlaAlaGlnGlnHisSerAlaAspPheG  
InAlaSerHisTyrGlnArgAspAlaValArgAlaArgGlnGlnAlaLysAlaAlaPheLeuProHisValSe  
rAlaAsnAlaSerTyrGlnArgGlnProProSerIleSerSerThrArgGluThrGlnGlyTrpSerValGlnVal  
GlyGlnThrLeuPheAspAlaAlaLysPheAlaGlnIleArgGlnSerArgPheAspThrGlnAlaAlaGluGlnA  
rgPheAspAlaAlaArgGluLeuLeuLeuLeuLysValAlaGluSerTyrPheAsnValLeuLeuSerArgAspTh  
rValAlaAlaHisAlaGluLysGluAlaTyrAlaGlnGlnValArgGlnAlaGlnIleAlaLeuPheAsnLysGly  
AlaAlaTyrAlaLeuAspIleHisGluAlaLysAlaGlyTyrAspAsnAlaLeuAlaGlnGluIleAlaValLeuA  
laGluLysGlnThrTyrGluAsnGlnLeuAsnAspTyrThrGlyLeuAspSerLysGlnIleGluAlaIleAspTh  
rAlaAsnLeuLeuAlaArgTyrLeuProLysLeuGluArgTyrSerLeuAspGluTrpGlnArgIleAlaLeuSer  
AsnAsnHisGluTyrArgMetGlnGlnLeuAlaLeuGlnSerSerGlyGlnAlaLeuArgAlaAlaGlnAsnSerA  
rgTyrProThrValSerAlaHisValGlyTyrGlnAsnLeuTyrThrSerSerAlaGlnAsnAsnAspTyrHi  
sTyrArgGlyLysGlyMetSerValGlyValGlnLeuAsnLeuProLeuTyrThrGlyGlyGluLeuSerGlyLys  
IleHisGluAlaGluAlaGlnTyrGlyAlaAlaGluAlaGlnLeuThrAlaThrGluArgHisIleLeuAlaV  
alArgGlnAlaTyrThrGluSerGlyAlaAlaArgTyrGlnIleMetAlaGlnGluArgValLeuGluSerSerAr  
gLeuLysLeuLysSerThrGluThrGlyGlnGlnTyrGlyIleArgAsnArgLeuGluValIleArgAlaArgGln  
GluValAlaGlnAlaGluGlnLysLeuAlaGlnAlaArgTyrLysPheMetLeuAlaTyrLeuArgLeuValLysG  
luSerGlyLeuGlyLeuGluThrValPheAlaGlu-467

**Hydrophilic Regions - Hopp-Woods**

1-MetThrLeuLeuAsnLeuMetIleMetGlnAspPheTyrGlyIleSerValCysLeuThrLeuThrProTyrLeuGl  
nHisGluLeuPheSerAlaMetLysSerTyrPheSerLysTyrIleLeuProValSerLeuPheThrLeuProLeu  
SerLeuSerProSerValSerAlaPheThrLeuProGluAlaTrpArgAlaAlaGlnGlnHisSerAlaAspPheG  
InAlaSerHisTyrGlnArgAspAlaValArgAlaArgGlnGlnAlaLysAlaAlaPheLeuProHisValSe  
rAlaAsnAlaSerTyrGlnArgGlnProProSerIleSerSerThrArgGluThrGlnGlyTrpSerValGlnVal  
GlyGlnThrLeuPheAspAlaAlaLysPheAlaGlnTyrArgGlnSerArgPheAspThrGlnAlaAlaGluGlnA  
rgPheAspAlaAlaArgGluGluLeuLeuLysValAlaGluSerTyrPheAsnValLeuLeuSerArgAspTh

-616-

rValAlaAlaHisAlaAlaAlaGluLysGluAlaTyrAlaGlnGlnValArgGlnAlaGlnAlaLeuPheAsnLysGly  
 AlaAlaThrAlaLeuAspIleHisGluAlaLysAlaGlyTyrAspAsnAlaLeuAlaGlnGluIleAlaValLeuA  
 laGluLysGlnThrTyrGluAsnGlnLeuAsnAspTyrThrGlyLeuAspSerLysGlnIleGluAlaIleAspTh  
 rAlaAsnLeuAlaArgTyrLeuProLysLeuGluArgTyrSerLeuAspGluTrpGlnArgAlaIleAlaLeuSer  
 AsnAsnHisGluTyrArgMetGlnGlnLeuAlaLeuGlnSerSerGlyGlnAlaLeuArgAlaAlaGlnAsnSerA  
 rgTyrProThrValSerAlaHisValGlyTyrGlnAsnAsnLeuTyrThrSerSerAlaGlnAsnAsnAspTyrHi  
 sTyrArgGlyLysGlyMetSerValGlyValGlnLeuAsnLeuProLeuTyrThrGlyGlyGluLeuSerGlyLys  
 IleHisGluAlaGluAlaGlnTyrGlyAlaAlaGluAlaGlnLeuThrAlaThrGluArgHisIleLysLeuAlaV  
 alArgGlnAlaTyrThrGluSerGlyAlaIleArgTyrGlnIleMetAlaGlnGluArgValLeuGluSerSerAr  
 gLeuLysLeuLysSerThrGluThrGlyGlnGlnTyrGlyIleArgAsnArgLeuGluValIleArgAlaArgGln  
 GluValAlaGlnAlaGluGlnLysLeuAlaGlnAlaArgTyrLysPheMetLeuAlaTyrLeuArgLeuValLysG  
 luSerGlyLeuGlyLeuGluThrValPheAlaGlu-467

**a764****AMPHI Regions - AMPHI**

1-MetPhePheSerAlaLeuLysSerPheLeuSerArgTyrIleThrValTrpArgAsnValTrpAlaValArgAs  
 pGlnLeuGluProProLysArgThrAlaGluGluGlnAlaPheLeuProAlaHisLeuGluLeuThrAspThrPro  
 ValSerAlaAlaProLysTrpAlaAlaArgPheIleMetAlaPheAlaLeuLeuAlaLeuLeuTrpSerTrpPheG  
 lyLysIleAspIleValAlaAlaAlaSerGlyLysThrValSerGlyArgSerLysThrIleGlnProLeuGl  
 uThrValValValLysAlaValHisValArgAspGlyGlnHisValLysGlnGlyGluThrLeuAlaGluLeuGlu  
 AlaValGlyThrAspSerAspValValGlnSerGluGlnAlaLeuGlnAlaIlaGlnLeuSerLysLeuArgTyrG  
 luAlaLeuAlaLeuAlaLeuGluSerArgThrValProHisAlaAspMetAlaGlnAlaArgSerLeuGlyLeuSe  
 rAspAlaAspValGlnSerAlaGlnLeuAlaGlnHisGlnTyrGlnAlaTrpAlaAlaGlnAspAlaGlnLeu  
 GlnSerAlaLeuArgGlyHisGlnAlaGluLeuGlnSerAlaLysAlaGlnGluGlnLysLeuValSerValGlyA  
 lAlleGlnGlnLysThrAlaAspTyrArgArgLeuAlaAspAsnPheIleSerGlyGlnHisAlaLeuGlu  
 uGlnGlnSerLysSerValSerAsnTrpAspLeuGluSerThrArgGlyGlnMetArgGlnIleGlnAlaAla  
 IleAlaGlnAlaGluGlnAsnArgValLeuAsnThrGlnAsnLeuLysArgAspThrLeuAspAlaLeuArgGlnA  
 laAsnGluGlnIleAspGlnTyrArgGlyGlnThrAspLysAlaLysGlnArgGlnLeuMetThrIleGlnSe  
 rProAlaAspGlyThrValGlnGluLeuAlaThrTyrThrValGlyGlyValGlnAlaIlaGlnLysMetMet  
 ValValAlaProAspAspAspLysMetAspValGluValLeuValLeuAsnLysAspIleGlyPheValGluGlnG  
 lyGlnAspAlaValValLysIleGluSerPheProTyrThrArgTyrGlyTyrLeuThrGlyLysValLysSerVa  
 lSerHisAspAlaValSerHisGluGlnLeuGlyLeuValTyrThrAlaValValSerLeuAspLysHisThrLeu  
 AsnIleAspGlyLys-435

**Antigenic Index - Jameson-Wolf**

1-MetPhePheSerAlaLeuLysSerPheLeuSerArgTyrIleThrValTrpArgAsnValTrpAlaValArgAs  
 pGlnLeuGluProProLysArgThrAlaGluGluGlnAlaPheLeuProAlaHisLeuGluLeuThrAspThrPro  
 ValSerAlaAlaProLysTrpAlaAlaArgPheIleMetAlaPheAlaLeuLeuAlaLeuLeuTrpSerTrpPheG  
 lyLysIleAspIleValAlaAlaAlaSerGlyLysThrValSerGlyArgSerLysThrIleGlnProLeuGl  
 uThrValValValLysAlaValHisValArgAspGlyGlnHisValLysGlnGlyGluThrLeuAlaGluLeuGlu  
 AlaValGlyThrAspSerAspValValGlnSerGluGlnAlaLeuGlnAlaIlaGlnLeuSerLysLeuArgTyrG  
 luAlaValLeuAlaLeuAlaLeuGluSerArgThrValPrcHisIleAspMetAlaGlnAlaArgSerLeuGlyLeuSe  
 rAspAlaAspValGlnSerAlaGlnLeuAlaGlnHisGlnTyrGlnAlaIlaTrpAlaAlaGlnAspAlaGlnLeu  
 GlnSerAlaLeuArgGlyHisGlnAlaGluLeuGlnSerAlaLysAlaGlnGluGlnLysLeuValSerValGlyA  
 laIleGluGlnGlnLysThrAlaAspTyrArgArgLeuArgAlaAspAsnPheIleSerGlyGlnHisAlaPheLeuG  
 uGlnGlnSerLysSerValSerAsnTrpAspLeuGluSerThrArgGlyGlnMetArgGlnIleGlnAlaAla  
 IleAlaGlnAlaGluGlnAsnArgValLeuAsnThrGlnAsnLeuLysArgAspThrLeuAspAlaLeuArgGlnA  
 laAsnGluGlnIleAspGlnTyrArgGlyGlnThrAspLysAlaLysGlnArgGlnLeuMetThrIleGlnSe  
 rProAlaAspGlyThrValGlnGluLeuAlaThrTyrThrValGlyGlyValGlnAlaIlaGlnLysMetMet  
 ValValAlaProAspAspAspLysMetAspValGluValLeuValLeuAsnLysAspIleGlyPheValGluGlnG  
 lyGlnAspAlaValValLysIleGluSerPheProTyrThrArgTyrGlyTyrLeuThrGlyLysValLysSerVa  
 lSerHisAspAlaValSerHisGluGlnLeuGlyLeuValTyrThrAlaValValSerLeuAspLysHisThrLeu  
 AsnIleAspGlyLys-435

**Hydrophilic Regions - Hopp-Woods**

-617-

1-MetPhePheSerAlaLeuLysSerPheLeuSerArgTyrIleThrValTrpArgAsnValTrpAlaValArgAspGlnLeuGluProProLysArgThrAlaGluGluGlnAlaPheLeuProAlaHisLeuGluLeuThrAspThrProValSerAlaAlaProLysTrpAlaAlaArgPheIleMetAlaPheAlaLeuLeuAlaLeuLeuTrpSerTrpPheGlyLysIleAspIleValAlaAlaAlaSerGlyLysThrValSerGlyGlyArgSerLysThrIleGlnProLeuGluThrValValValLysAlaValHisValArgAspGlyGlnHisValLysGlnGlyGluThrLeuAlaGluLeuAlaValGlyThrAspSerAspValValGlnSerAlaLeuAlaGluSerArgThrValProHisIleAspMetAlaGlnAlaArgSerLeuGlyLeuSerAspAlaAspValGlnSerAlaGlnValLeuAlaGlnHisGlnTyrGlnAlaTrpAlaAlaGlnAspAlaGlnLeuGlnSerAlaLeuArgGlyHisGlnAlaGluLeuGlnSerAlaLysAlaGlnGluGlnLysLeuValSerValGlyAlaIleGluGlnGlnLysThrAlaAspTyrArgArgLeuArgAlaAspAsnPhenileSerGluHisAlaPheLeuGluGlnGlnSerLysSerValSerAsnTrpAsnAspLeuGluSerThrArgGlyGlnMetArgGlnIleGlnAlaAlaIleAlaGlnAlaGluGlnAsnArgValLeuAsnThrGlnAsnLeuLysArgAspThrLeuAspAlaLeuArgGlnAlaAsnGluGlnIleAspGlnTyrArgGlyGlnThrAspLysAlaLysGlnArgGlnGlnLeuMetThrIleGlnSerProAlaAspGlyThrValGlnGluLeuAlaThrTyrThrValGlyGlyValGlnAlaAlaGlnLysMetMetValValAlaProAspAspAspLysMetAspValGluValLeuAsnLysAspIleGlyPheValGluGlnGlyGlnAspAlaValValIleGluSerPheProTyrThrArgTyrGlyTyrLeuThrGlyLysValLysSerValSerHisAspAlaValSerHisGluGlnLeuGlyLeuValTyrThrAlaValValSerLeuAspLysHisThrLeuAsnIleAspGlyLys-435

**a765****AMPHI Regions - AMPHI**

36-SerAlaIleSerSerPheCys-42  
 45-LysIleIleHisThrTyr-50  
 59-ValIleGlyIleIleAsnGly-65  
 105-ArgPheLeuAsnNhrGly-110  
 147-PheGlyLeuCysTyrPro-152

**Antigenic Index - Jameson-Wolf**

10-GlyAsnPheLysLysIleAlaThr-17  
 19-GlnGlyLeuAspArgLysTyr-25  
 76-ValLysAsnLysGlnLysPheLeu-83  
 106-PheLeuAsnArgGlyMetLys-112  
 132-LeuAsnGluGlyGlyTrpMet-139  
 160-LeuSerArgAspTyrLysHisIle-167

**Hydrophilic Regions - Hopp-Woods**

11-AsnPheLysLysIleAlaThr-17  
 19-GlnGlyLeuAspArgLys-24  
 76-ValLysAsnLysGlnLysPheLeu-83  
 133-AsnGluGluGlyGly-137  
 162-ArgAspTyrLysHis-166

**a767****AMPHI Regions - AMPHI**

42-LysIleGluValLeuGluPhePheGlyTyrPheCysVal-54  
 89-GlyLeuAlaArgMetAlaAlaAlaValLys-98  
 140-LysLysLeuMetArgAlaTyrAspSerProAlaAla-151  
 156-SerLysMetGlnGlnLeuThrGluGlnTyrArg-166  
 187-PheAspGlyGlyValHisThrIleLysGluLeuValAla-199

**Antigenic Index - Jameson-Wolf**

23-ThrGluGlyGluAspTyrLeuVal-30  
 33-LysProIleProGlnLysGlnSerGlyLysIleGluVal-45  
 70-LeuProSerAspAlaTyrLeuArg-77  
 99-LeuSerGlyLeuLysTyrGlnAla-106  
 115-TyrGluGlnLysIleArgLeuGluAsnArgSerValAlaGlu-128  
 130-TrpAlaLeuSerGlnLysGlyPheAspGlyLysLysLeuMetArgAlaTyrAspSerProAla-150

-618-

156-SerLysMetGlnGlnLeuThrGluGlnTyrArgIleAspSerThrProThr-172  
 175-ValGlyGlyLysTyrArgVal-181  
 183-PheAsnAsnGlyPheAspGlyGly-190  
 197-LeuValAlaLysValArgGluGluArgLysArgGlnThrProAlaValGlnLys-214

**Hydrophilic Regions - Hopp-Woods**

23-ThrGluGlyGluAsp-27  
 33-LysProIleProGlnLysGlnSerGlyLysIleGluVal-45  
 115-TyrGluGlnLysIleArgLeuGluAsnArgSerValAlaGlu-128  
 135-LysGlyPheAspGlyLysLysLeuMetArgAlaTyrAsp-147  
 156-SerLysMetGlnGlnLeu-161  
 165-TyrArgIleAspSer-169  
 197-LeuValAlaLysValArgGluGluArgLysArgGlnThrProAlaValGlnLys-214

**a768****AMPHI Regions - AMPHI**

1-MetAsnIleLysHisLeuIleThrAlaAlaLeuIleAlaSerAlaAlaPheAlaAlaGlnAlaAlaProGlnLy  
 sProValSerAlaAlaGlnThrAlaGlnHisSerAlaValTrpIleAspValArgSerGluGlnGluPheSerGlu  
 GlyHisLeuHisAsnAlaValAsnIleProValAspGlnIleValArgArgIleHisGluAlaAlaProAspLysA  
 spThrProValAsnLeuTyrCysArgSerGlyArgAlaGluAlaAlaLeuGlnGluLeuLysLysAlaGlyTy  
 rThrAsnValAlaAsnHisGlyGlyTyrGluAspLeuLeuLysLysGlyMetLys

**Antigenic Index - Jameson-Wolf**

1-MetAsnIleLysHisLeuIleThrAlaAlaLeuIleAlaSerAlaAlaPheAlaAlaGlnAlaAlaProGlnLy  
 sProValSerAlaAlaGlnThrAlaGlnHisSerAlaValTrpIleAspValArgSerGluGlnGluPheSerGlu  
 GlyHisLeuHisAsnAlaValAsnIleProValAspGlnIleValArgArgIleHisGluAlaAlaProAspLysA  
 spThrProValAsnLeuTyrCysArgSerGlyArgAlaGluAlaAlaLeuGlnGluLeuLysLysAlaGlyTy  
 rThrAsnValAlaAsnHisGlyGlyTyrGluAspLeuLeuLysLysGlyMetLys

**Hydrophilic Regions - Hopp-Woods**

1-MetAsnIleLysHisLeuIleThrAlaAlaLeuIleAlaSerAlaAlaPheAlaAlaGlnAlaAlaProGlnLy  
 sProValSerAlaAlaGlnThrAlaGlnHisSerAlaValTrpIleAspValArgSerGluGlnGluPheSerGlu  
 GlyHisLeuHisAsnAlaValAsnIleProValAspGlnIleValArgArgIleHisGluAlaAlaProAspLysA  
 spThrProValAsnLeuTyrCysArgSerGlyArgAlaGluAlaAlaLeuGlnGluLeuLysLysAlaGlyTy  
 rThrAsnValAlaAsnHisGlyGlyTyrGluAspLeuLeuLysLysGlyMetLys-119

**a769****AMPHI Regions - AMPHI**

1-LeuIleMetValIlePheTyrPheCysGlyLysThrPheMetProAlaArgAsnArgTrpMetLeuLeuLeuPr  
 oLeuLeuAlaSerAlaTyrAlaGluGluThrProArgGluProAspLeuArgSerArgProGluPheArgLeu  
 HisGluAlaGluValLysProIleAspArgGluGluValProGlyGlnValArgGluLysGlyLysValLeuGlnI  
 leAspGlyGluThrLeuLeuLysAsnProGluLeuLeuSerArgAlaMetTyrSerAlaValValSerAsnIl  
 eAlaGlyIleArgLeuLeuIleProIleTyrLeuGlnGlnAspLysMetLeuAlaLeuLeuIleTyrAlaGln  
 GlyIleLeuAlaGlnAlaAspGlyArgValLysGluAlaIleSerHistYrArgGluLeuIleValAlaGlnProA  
 spAlaProAlaValArgMetArgLeuAlaAlaLeuPheGluAsnArgGlnAsnGluAlaAlaAlaAspGlnPh  
 eAspArgLeuLysAlaGluAsnLeuProProGlnLeuMetGluGlnValGluLeuTyrArgLysAlaLeuArgGlu  
 ArgAspAlaTrpLysValAsnGlyGlyPheSerValThrArgGluHisAsnIleAsnGlnAlaProLysArgGlnG  
 lnTyrGlyLysTrpThrPheProLysClnValAspGlyThraAlaAsnTyrArgLeuGlyAlaGluLysLeuTr  
 pSerLeuLysAsnGlyTrpTyrThrThrAlaGlyGlyAspValSerGlyArgValTyrProGlyAsnLysPhe  
 AsnAspMetThrAlaGlyValSerGlyGlyIleGlyPheAlaAspArgArgLysAspAlaGlyLeuAlaValPheH  
 isGluArgArgThrTyrGlyAsnAspAlaTyrSerTyrThrAsnGlyAlaArgLeuTyrPheAsnArgTrpGlnTh  
 rProLysTrpGlnThrLeuSerSerAlaGluTrpGlyArgLeuLysAsnThrArgArgAlaArgSerAspAsnThr  
 HisLeuGlnIleSerAsnSerLeuValTyrArgAsnAlaArgGlnTyrTrpMetGlyGlyLeuAspPheTyrA  
 rgGluArgAspProAlaAspArgGlyAspAsnAspArgTyrGlyLeuArgPheAlaTrpGlyGlnGluTrpG  
 lyGlySerGlyLeuSerSerLeuLeuArgLeuGlyAlaAlaLysArgHisTyrGluLysProGlyPhePheSerGly  
 PheLysGlyGluArgArgArgAspLysGluLeuAsnThrSerLeuSerLeuLeuTyrArgSerAsnAspValPheAsnGluTyrGluLysAsnAr  
 gAlaPheValGluPheAsnLysThrPhe-490

**Antigenic Index - Jameson-Wolf**

1-LeuIleMetValIlePheTyrPheCysGlyLysThrPheMetProAlaArgAsnArgTrpMetLeuLeuLeuPro  
oLeuLeuAlaSerAlaAlaTyrAlaGluGluThrProArgGluProAspLeuArgSerArgProGluPheArgLeu  
HisGluAlaGluValLysProIleAspArgGluLysValProGlyGlnValArgGluLysGlyLysValLeuGlnI  
leAspGlyGluThrLeuLeuLysAsnProGluLeuLeuSerArgAlaMetTyrSerAlaValValSerAsnIl  
eAlaGlyIleArgValIleLeuProIleTyrLeuGlnGlnAlaGlnGlnAspLysMetLeuAlaLeuTyrAlaGln  
GlyIleLeuAlaGlnAlaAspGlyArgValGlyGluAlaIleSerHisTyrArgGluLeuIleValAlaGlnProA  
spAlaProAlaValArgMetArgLeuAlaAlaLeuPheGluAsnArgGlnAsnGluAlaAlaAlaAspGlnPh  
eAspArgLeuLysAlaGluAsnLeuProProGlnLeuMetGluGlnValGluLeuTyrArgLysAlaLeuArgGlu  
ArgAspAlaTrpLysValAsnGlyGlyPheSerValThrArgGluHisAsnIleAsnGlnAlaProLysArgGlnG  
lnTyrGlyLysTrpThrPheProLysGlnValAspGlyThraAlaValAsnTyrArgLeuGlyAlaGluLysLysTr  
pSerLeuLysAsnGlyTrpTyrThrThrAlaGlyGlyAspValSerGlyArgValTyrProGlyAsnLysLysPhe  
AsnAspMetThrAlaGlyValSerGlyGlyIleGlyPheAlaAspArgArgLysAspAlaGlyLeuAlaValPheH  
isGluArgArgThrTyrGlyAsnAspAlaTyrSerTyrThrAsnGlyAlaArgLeuTyrPheAsnArgTrpGlnTh  
rProLysTrpGlnThrLeuSerSerAlaGluTrpGlyArgLeuLysAsnThrArgArgAlaLeuTyrPheAsnArgTrpGlnTh  
HisLeuGlnIleSerAsnSerLeuValPheTyrArgAsnAlaArgGlnTyrTrpMetGlyLeuAspPheTyrA  
rgGluArgAsnProAlaAspArgGlyAspPheAsnArgTyrGlyLeuArgPheAlaTrpGlyGlnGluTrpGlnTh  
yGlySerGlyLeuSerSerLeuLeuArgLeuGlyAlaAlaLysArgHisTyrGluLysProGlyPheSerGly  
PheLysGlyGluArgArgArgAspLysGluLeuAsnThrSerLeuSerLeuTrpHisArgAlaLeuHisPheLysG  
lyIleThrProArgLeuThrLeuSerHisArgGluThrArgSerAsnAspValPheAsnGluTyrGluLysAsnAr  
gAlaPheValGluPheAsnLysThrPhe-490

**Hydrophilic Regions - Hopp-Woods**

1-LeuIleMetValIlePheTyrPheCysGlyLysThrPheMetProAlaArgAsnArgTrpMetLeuLeuLeuPro  
oLeuLeuAlaSerAlaAlaTyrAlaGluGluThrProArgGluProAspLeuArgSerArgProGluPheArgLeu  
HisGluAlaGluValLysProIleAspArgGluLysValProGlyGlnValArgGluLysGlyLysValLeuGlnI  
leAspGlyGluThrLeuLeuLysAsnProGluLeuLeuSerArgAlaMetTyrSerAlaValValSerAsnIl  
eAlaGlyIleArgValIleLeuProIleTyrLeuGlnGlnAlaGlnGlnAspLysMetLeuAlaLeuTyrAlaGln  
GlyIleLeuAlaGlnAlaAspGlyArgValLysGluAlaIleSerHisTyrArgGluLeuLeuValAlaGlnProA  
spAlaProAlaValArgMetArgLeuAlaAlaLeuPheGluAsnArgGlnAsnGluAlaAlaAlaAspGlnPh  
eAspArgLeuLysAlaGlnAsnLeuProProGlnLeuMetGluGlnValGluLeuTyrArgLysAlaLeuArgGlu  
ArgAspAlaTrpLysValAsnGlyGlyPheSerValThrArgGluHisAsnIleAsnGlnAlaProLysArgGlnG  
lnTyrGlyLysTrpThrPheProLysGlnValAspGlyThraAlaValAsnTyrArgLeuGlyAlaGluLysLysTr  
pSerLeuLysAsnGlyTrpTyrThrThrAlaGlyGlyAspValSerGlyArgValTyrProGlyAsnLysLysPhe  
AsnAspMetThrAlaGlyValSerGlyGlyIleGlyPheAlaAspArgArgLysAspAlaGlyLeuAlaValPheH  
isGluArgArgThrTyrGlyAsnAspAlaTyrSerTyrThrAsnGlyAlaArgLeuTyrPheAsnArgTrpGlnTh  
rProLysTrpGlnThrLeuSerSerAlaGluTrpGlyArgLeuLysAsnThrArgArgAlaSerGlyAspSerAsnThr  
HisLeuGlnIleSerAsnSerLeuValPheTyrArgAsnAlaArgGlnTyrTrpMetGlyGlyLeuAspPheTyrA  
rgGluArgAsnProAlaAspArgGlyAspPheAsnArgTyrGlyLeuArgPheAlaTrpGlyGlnGluTrpGlnTh  
yGlySerGlyLeuSerSerLeuLeuArgLeuGlyAlaAlaLysArgHisTyrGluLysProGlyPheSerGly  
PheLysGlyGluArgArgArgAspLysGluLeuAsnThrSerLeuSerLeuTrpHisArgAlaLeuHisPheLysG  
lyIleThrProArgLeuThrLeuSerHisArgGluThrArgSerAsnAspValPheAsnGluTyrGluLysAsnAr  
gAlaPheValGluPheAsnLysThrPhe-490

a770

**AMPHI Regions - AMPHI**

1-MetAsnArgLeuIleLeuLeuSerAlaAlaValLeuLeuThrAlaCysGlySerGlyGluThrAspLysIleGl  
yArgAlaSerThrValPheAsnIleLeuGlyLysAsnAspArgIleGluValGluGlyPheAspAspProAspVal  
GlnGlyValAlaCysTyrIleSerTyrAlaLysLysGlyGlyLeuLysGluMetValAsnLeuGluGluAspAlaS  
erAspAlaSerValSerCysValGlnThrAlaSerSerIleSerPheAspGluThrAlaValArgLysProLysCl  
uValPheLysHisGlyAlaSerPheAlaPheLysSerArgGlnIleValArgTyrTyrAspProLysArgLysThr  
PheAlaTyrLeuValTyrSerAspLysIleIleGlnGlySerProLysAsnSerLeuSerAlaValSerCysPheG  
lyGlyGlyIleProGlnThrAspGlyValGlnAlaAspThrSerGlyAsnLeuLeuAlaGlyAlaCysMetIleSe  
rAsnProIleGluAsnProAspLysArg-186

**Antigenic Index - Jameson-Wolf**

1-MetAsnArgLeuLeuLeuSerAlaAlaValLeuLeuThrAlaCysGlySerGlyGluThrAspLysIleGlyArgAlaSerThrValPheAsnIleLeuGlyLysAsnAspArgIleGluValGluGlyPheAspAspProAspValGlnGlyValAlaCysTyrIleSerTyrAlaLysLysGlyGlyLeuLysGluMetValAsnLeuGluGluAspAlaSerAspAlaSerValSerCysValGlnThrAlaSerSerIleSerPheAspGluThrAlaValArgLysProLysGluValPheLysHisGlyAlaSerPheAlaPheLysSerArgGlnIleValArgTyrTyrAspProLysArgLysThrPheAlaTyrLeuValTyrSerAspLysIleIleGlnGlySerProLysAsnSerLeuSerAlaValSerCysPheGlyGlyIleProGlnThrAspGlyValGlnAlaAspThrSerGlyAsnLeuLeuAlaGlyAlaCysMetIleSerAsnProIleGluAsnProAspLysArg-186

**Hydrophilic Regions - Hopp-Woods**

1-MetAsnArgLeuLeuLeuSerAlaAlaValLeuLeuThrAlaCysGlySerGlyGluThrAspLysIleGlyArgAlaSerThrValPheAsnIleLeuGlyLysAsnAspArgIleGluValGluGlyPheAspAspProAspValGlnGlyValAlaCysTyrIleSerTyrAlaLysLysGlyGlyLeuLysGluMetValAsnLeuGluGluAspAlaSerAspAlaSerValSerCysValGlnThrAlaSerSerIleSerPheAspGluThrAlaValArgLysProLysGluValPheLysHisGlyAlaSerPheAlaPheLysSerArgGlnIleValArgTyrTyrAspProLysArgLysThrPheAlaTyrLeuValTyrSerAspLysIleIleGlnGlySerProLysAsnSerLeuSerAlaValSerCysPheGlyGlyIleProGlnThrAspGlyValGlnAlaAspThrSerGlyAsnLeuLeuAlaGlyAlaCysMetIleSerAsnProIleGluAsnProAspLysArg-186

a771

**AMPHI Regions - AMPHI**

1-MetAspLeuLeuSerValPheHisLysTyrArgLeuLysTyrAlaValAlaValLeuThrIleLeuLeuAlaAlaIleGlyLeuHisAlaSerValTyrArgIlePheThrProGluAsnIleArgSerArgLeuGlnGlnSerIleAlaThrHisArgLysIleSerPheAspAlaAspIleGlnArgLeuLeuProArgProThrValIleLeuLysAsnLeuThrIleThrGluProGlyGlyAspArgThrAlaValSerValGlnGluThrLysIleGlyLeuSerTrpLysAsnLeuTrpSerAspGlnIleGlnIleGluLysTrpValValSerSerAlaGluLeuAlaLeuThrArgAspGlyLysGlyValTrpAsnIleGlnAspIleAspSerGlnLysArgGlnAlaSerValAsnArgIleIleValGluAsnSerThrValArgIleLeuAsnPhleUglnGlnLeuIleLeuLysGluIleAsnLeuAsnLeuGlnSerProAspSerGlyGlnProPheGluSerSerGlyIleLeuValTrpGlyLysLeuSerValProTrpLysSerArgGlyLeuPheLeuSerAspGlyIleGlyThrProLysIleSerProPheHisPheGluAlaSerThrSerLeuAspGlyHisGlyIleThrIleSerThrThrGlySerProSerValArgPheAsnAlaGlyGlyAlaAspAlaAlaGlyLeuGlyLeuArgAlaAspThrSerPheArgAsnLeuHisLeuThrAlaGlnIleProThrLeuAlaLeuArgAsnAsnSerIleLysIleGluThrValAsnGlyAlaPheThrAlaGlyGlyGluTyraIleGlnTrpAspGlySerPheLysLeuAspLysAlaAsnLeuHisSerGlyIleAlaAsnIleSerGlyAsnAlaGluIleSerGlySerPheLysThrProArgGlyGlnThrAsnProSerLeuAsnProTrpValTrpThrGluAsnLysGlyLeuAspAlaProArgLeuTyrValSerThrLeuGlnAspThrValAsnArgLeuProGlnProArgPheIleSerArgLeuAspGlySerLeuSerValProAsnLeuGlnAspTrpAsnIlaGluAsnGlyThrPheAspArgGlnThrValAlaAlaLysPheArgTyThrHisGlyAspAlaProHisLeuGluAlaAlaValAlaLeuGlnLysLeuAsnLeuThrProTyrLeuAspAspValArgGlnGlnAsnGlyLysIlePheProAspThrLeuAlaLysLeuSerGlyAspIleGluAlaHisLeuLysIleGlyLysValGlnLeuProGlyLeuLeuAspAspMetGluThrTyrHisAlaAspLysGlyIleAlaLeuSerArgPheIleSerGlyLeuTyrGlyHisThrGluGlyIleSerIleAlaAsnThrArgProAlaThrTyrArgLeuGlnGlnAsaAlaSerAsnIleGlnIleGlnProLeuLeuGlnAspLeuPheGlyPheHisSerPheSerGlyAsnGlyAspAlaValIleAspLeuThrAlaGlyGlyGluIleArgLysGluLeuIleArgSerLeuGlnGlySerLeuSerLeuAsnIleSerAsnGlyAlaTrpHisGlyIleAspMetAspAsnIleLeuLysAsnGlyIleSerGlyLysThrAlaAspAsnAlaAlaProSerThrProPheHisArgPheThrLeuAsnSerGluIleSerAspGlyIleSerArgHisIleAspThrGluLeuPheSerAspSerLeuTyrValThrSerAsnGlyTyrThrAsnLeuAspTyrGlnGluLeuSerGluAspValLeuIleArgAsnAlaValHisProLysAsnLysProIleProLeuLysIleThrGlyThrValAspLysProSerIleThrValAspIleArgLeuThrGlyGlyIleAlaSerArgLysGluIlysGlnLysIleLeuGluAspThrLeuLeuGluGlnTrpGlnTrpLeuLysProLysGluPro-704

**Antigenic Index - Jameson-Wolf**

1-MetAspLeuLeuSerValPheHisLysTyrArgLeuLysTyrAlaValAlaValLeuThrIleLeuLeuAlaAlaIleGlyLeuHisAlaSerValTyrArgIlePheThrProGluAsnIleArgSerArgLeuGlnGlnSerIleAlaHisThrHisArgLysIleSerPheAspAlaAspIleGlnArgArgLeuLeuProArgProThrValIleLeuAspAsnLeuThrIleThrGluProGlyGlyAspArgThrAlaValSerValGlnGluThrLysIleGlyLeuSerTr

-621-

pLysAsnLeuTrpSerAspGlnIleGlnIleGluLysTrpValValSerSerAlaGluLeuAlaLeuThrArgAsp  
 GlyLysGlyValTrpAsnIleGlnAspLeuIleAspSerGlnLysArgGlnAlaSerValAsnArgIleIleValG  
 luAsnSerThrValArgLeuAsnPheLeuGlnGluLeuIleLeuLysGluIleAsnLeuAsnLeuGlnSerPr  
 oAspSerSerGlyGlnProPheGluSerSerGlyIleLeuValTrpGlyGlyLeuSerValProTrpLyserArg  
 GlyLeuPheLeuSerAspGlyIleGlyThrProLyssileSerProPheHisPheGluAlaSerThrSerLeuAspG  
 lyHisGlyIleThrIleSerThrThrGlySerProSerValArgPheAsnAlaGlyGlyAlaAspAlaIleGlyLe  
 uGlyLeuArgAlaAspThrSerPheArgAsnLeuHisLeuThrAlaGlnIleProThrLeuAlaLeuArgAsnAsn  
 SerIleLysIleGluThrValAsnGlyAlaPheThrAlaGlyGlyGluTyrAlaGlnTrpAspGlySerPheLysL  
 euAspLysAlaAsnLeuHisSerGlyIleAlaAsnIleGlyAsnAlaGluIleSerGlySerPheLysThrProAr  
 gHisGlnThrAsnPheSerLeuAsnSerProLeuValTrpThrGluAsnLysGlyLeuAspAlaProArgLeuTyr  
 ValSerThrLeuGlnAspTrhValAsnArgLeuProGlnProArgPheIleSerRgLeuAspGlySerLeuSerV  
 alProAsnLeuGlnAsnTrpAsnAlaGluLeuAsnGlyThrPheAspArgGlnThrValAlaAlaLysPheArgTy  
 rThrHisGluAspAlaProHisLeuGluAlaAlaValAlaLeuGlnLysLeuAsnLeuThrProTyrLeuAspAsp  
 ValArgGlnGlnAsnGlyIlePheProAspThrLeuAlaLysSerGlyAspIleGluAlaHisLeuLysI  
 leGlyLysValGlnLeuProGlyLeuGlnAspMetGluThrTyrLeuHisAlaAspLysGlyHisIleAl  
 aLeuSerArgPheLysSerGlyLeuTyrGlyGlyHisThrGluGlyGlyIleSerIleAlaAsnThrArgProAla  
 ThrTyrArgLeuGlnGlnAsnAlaSerAsnIleGlnIleProLeuLeuGlnAspLeuPheGlyPheHisSerP  
 heSerGlyAsnGlyAspAlaValIleAspLeuThrAlaGlyGlyLeuThrArgLysGluLeuIleArgSerLeuG  
 lnyGlySerLeuLeuAsnIleSerAsnGlyAlaTrpHisGlyIleAspMetAspAsnIleLeuLysAsnGlyIle  
 SerGlyLysThrAlaAspAsnAlaAlaProSerThrProPheHisArgPheThrLeuAsnSerGluIleSerAspG  
 lyIleSerArgHisIleAspThrGluLeuPheSerAspSerLeuTyrValThrSerAsnGlyTyrThrAsnLeuAs  
 pThrGlnGluLeuSerGluAspValLeuIleArgAsnAlaValHisProLysAsnLysProleProLeuLysIle  
 ThrGlyThrValAspLysProSerIleThrValAspTyrGlyArgLeuThrGlyGlyIleAsnSerArgLysGluL  
 ysGlnLysIleLeuGluAspThrLeuGluGlnTrpGlnTrpLeuLysProLysGluPro-704

**Hydrophilic Regions - Hopp-Woods**

1-MetAspLeuSerValPheHisLysTyrArgLeuLysTyrAlaValAlaValLeuThrIleLeuLeuLeuAl  
 aAlaIleGlyLeuHisAlaSerValTyrArgIlePheThrProGluAsnIleargSerArgLeuGlnGlnSerIle  
 AlaHisThrHisArgLysIleSerPheAspAlaAspIleGlnIrgArgLeuleuProArgProThrValIleLeuL  
 ysAsnLeuThrIleThrGluProGlyGlyAspArgThrAlaValSerValGlnGluThrLysIleGlyLeuSerTr  
 pLysAsnLeuTrpSerAspGlnIleGlnIleGluLysTrpValValSerSerAlaGluLeuIleLeuThrArgAsp  
 GlyLysGlyValTrpAsnIleGlnAspLeuIleAspSerGlnLysArgGlnAlaSerValAsnArgIleIleValG  
 luAsnSerThrValArgLeuAsnPheLeuGlnGluLeuIleLeuLysGluIleAsnLeuAsnLeuGlnSerPr  
 oAspSerSerGlyGlnProPheGluSerSerGlyIleLeuValTrpGlyGlyLeuSerValProTrpLysserArg  
 GlyLeuPheLeuSerAspGlyIleGlyThrProLysIleSerProPheHisPheGluAlaSerThrSerLeuAspG  
 lyHisGlyIleThrIleSerThrThrGlySerProSerValArgPheAsnAlaGlyGlyAlaAspAlaAlaGlyLe  
 uGlyLeuArgAlaAspThrSerPheArgAsnLeuHisLeuThrAlaGlnIleProThrLeuAlaLeuArgAsnAsn  
 SerIleLysIleGluThrValAsnGlyAlaPheThrAlaGlyGlyGluTyrAlaGlnTrpAspGlySerPheLysL  
 euAspLysAlaAsnLeuHisSerGlyIleAlaAsnIleGlyAsnAlaGluIleSerGlySerPheLysThrProAr  
 gHisGlnThrAsnPheSerLeuAsnSerProLeuValTrpThrGluAsnLysGlyLeuAspAlaProArgLeuTyr  
 ValSerThrLeuGlnAspTrhValAsnArgLeuProGlnProArgPheIleSerArgLeuAspGlySerLeuSerV  
 alProAsnLeuGlnAsnTrpAsnAlaGluLeuAsnGlyThrPheAspArgGlnThrValAlaAlaLysPheArgTy  
 rThrHisGluAspAlaProHisLeuGluAlaAlaValAlaLeuGlnLysLeuAsnLeuThrProTyrLeuAspAsp  
 ValArgGlnGlnAsnGlyIlePheProAspThrLeuAlaLysLeuSerGlyAspIleGluAlaHisLeuLysI  
 leGlyLysValGlnLeuProGlyLeuGlnLeuAspAspMetGluThrTyrLeuHisAlaAspLysGlyHisIleAl  
 aLeuSerArgPheLysSerGlyLeuTyrGlyGlyHisThrGluGlyGlyIleSerIleAlaAsnThrArgProAla  
 ThrTyrArgLeuGlnGlnAsnAlaSerAsnIleGlnIleProLeuLeuGlnAspLeuPheGlyPheHisSerP  
 heSerGlyAsnGlyAspAlaValIleAspLeuThrAlaGlyGlyGluThrArgLysGluLeuIleArgSerLeuG  
 lnyGlySerLeuSerLeuAsnIleSerAsnGlyAlaTrpHisGlyIleAspMetAspAsnIleLeuLysAsnGlyIle  
 SerGlyLysThrAlaAspAsnAlaAlaProSerThrProPheHisArgPheThrLeuAsnSerGluIleSerAspG  
 lyIleSerArgHisIleAspThrGluLeuPheSerAspSerLeuTyrValThrSerAsnGlyTyrThrAsnLeuAs  
 pThrGlnGluLeuSerGluAspValLeuIleArgAsnAlaValHisProLysAsnLysProleProLeuLysIle  
 ThrGlyThrValAspLysProSerIleThrValAspTyrGlyArgLeuThrGlyGlyIleAsnSerArgLysGluL  
 ysGlnLysIleLeuGluAspThrLeuGluGlnTrpGlnTrpLeuLysProLysGluPro-704

a772

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**AMPHI Regions - AMPHI**

1-MetPheGlyAlaValLeuArgIleAspAlaAspCysLeuGlnIleIleValAlaCysLysLeuPheGlnIleVa  
 lAlaTyrGlyPheAlaAlaLeuValGluGlyGluMetLeuGluIleValArgLeuAla  
 AspThrValPheHisArgAsnHisAlaAspAspGlyArgIleHisPheArgArgGlyValGluArgPheGlyArgH  
 isValAsnGlnHisPheHisIleGluGluIleLeuGlnHisAlaGlnAlaAlaValValAlaPheArgAr  
 gGlyAsnHisThrIleAspHisPhePheLeuGlnHisLysValHisIleAspAspIleValArgHisLeuArgGln  
 LeuGluGlnLysArgArgGlyAsnValValGlyGlnValAlaAspAspPheLeuPheAlaCysAspAlaValGluI  
 leLysLeuGlnTyrIleAlaPheValAsnHisGlnPheHisGlnArgLysArgGlnArgPheGlnThrAlaTyrAspVa  
 lAlaValAspPheAspAsnValGlnAlaValGlnLeuPheArgGlnArgPheGlyAsnArgGlnThrArgThr  
 AspPheAsnHisAspIleIleArgLeuArgAlaHisGlyValAspAsnIleAlaAspAsnProArgValLeuGlnL  
 ysIleLeuProGluThrLeuAlaGlyPheValPheHisArgValSerValGluThrProProPheAr  
 gAlaValGluSerAspSerIleTrpGluGlyArgAsnSerPheGlnIleArgThrAlaHisArgAlaValLeuTyr  
 ValSerSerCysValLeuLysHisLysCysValTyrSerIleArgLeuMetSerAlaLeu-298

**Antigenic Index - Jameson-Wolf**

1-MetPheGlyAlaValLeuArgIleAspAlaAspCysLeuGlnIleIleValAlaCysLysLeuPheGlnIleVa  
 lAlaTyrGlyPheAlaAlaLeuValGluGlyGluPheHisGluPheGlyGluMetLeuGluIleValArgLeuAla  
 AspThrValPheHisArgAsnHisAlaAspAspGlyArgIleHisPheArgArgGlyValGluArgPheGlyArgH  
 isValAsnGlnHisPheHisIleGluGluIleLeuGlnHisAlaGlnAlaAlaValValAlaPheArgAr  
 gGlyAsnHisThrIleAspHisPhePheLeuGlnHisLysValHisIleAspAspIleValArgHisLeuArgGln  
 LeuGluGlnLysArgArgGlyAsnValValGlyGlnValAlaAspAspPheLeuPheAlaCysAspAlaValGluI  
 leLysLeuGlnTyrIleAlaPheValAsnHisGlnPheHisArgLysArgGlnArgPheGlnThrAlaTyrAspVa  
 lAlaValAspPheAspAsnValGlnAlaValGlnLeuPheArgGlnArgPheGlyAsnArgGlnThrArgThr  
 AspPheAsnHisAspIleIleArgLeuArgAlaHisGlyValAspAsnIleAlaAspAsnProArgValLeuGlnL  
 ysIleLeuProGluThrLeuAlaGlyPheValPheHisArgValSerValGluThrProProPheAr  
 gAlaValGluSerAspSerIleTrpGluGlyArgAsnSerPheGlnIleArgThrAlaHisArgAlaValLeuTyr  
 ValSerSerCysValLeuLysHisLysCysValTyrSerIleArgLeuMetSerAlaLeu-298

**Hydrophilic Regions - Hopp-Woods**

1-MetPheGlyAlaValLeuArgIleAspAlaAspCysLeuGlnIleIleValAlaCysLysLeuPheGlnIleVa  
 lAlaTyrGlyPheAlaAlaLeuValGluGlyGluPheHisGluPheGlyGluMetLeuGluIleValArgLeuAla  
 AspThrValPheHisArgAsnHisAlaAspAspGlyArgIleHisPheArgArgGlyValGluArgPheGlyArgH  
 isValAsnGlnHisPheHisIleGluGluIleLeuGlnHisAlaGlnAlaAlaValValAlaPheArgAr  
 gGlyAsnHisThrIleAspHisPhePheLeuGlnHisLysValHisIleAspAspIleValArgHisLeuArgGln  
 LeuGluGlnLysArgArgGlyAsnValValGlyGlnValAlaAspAspPheLeuPheAlaCysAspAlaValGluI  
 leLysLeuGlnTyrIleAlaPheValAsnHisGlnPheIleArgLysArgGlnArgPheGlnThrAlaTyrAspVa  
 lAlaValAspPheAspAsnValGlnAlaValGlnLeuPheArgGlnArgPheGlyAsnArgArgGlnThrArgThr  
 AspPheAsnHisAspIleIleArgLeuArgAlaHisGlyValAspAsnIleAlaAspAsnProArgValLeuGlnL  
 ysIleLeuProGluThrLeuAlaGlyPheValPheHisArgValSerValGluThrProProPheAr  
 gAlaValGluSerAspSerIleTrpGluGlyArgAsnSerPheGlnIleArgThrAlaHisArgAlaValLeuTyr  
 ValSerSerCysValLeuLysHisLysCysValTyrSerIleArgLeuMetSerAlaLeu-298

a774

**AMPHI Regions - AMPHI**

1-MetLysThrLysLeuProLeuPheIleIleTrpLeuSerValSerAlaAlaCysSerSerProValSerArgAs  
 nIleGlnAspMetArgLeuGluProGlnAlaGluAlaGlySerSerAspAlaIleProTyrProValProThrLeu  
 GlnAspArgLeuAspTyrLeuGluGlyThrLeuValArgLeuSerAsnGluValGluThrLeuAsnGlyLysValL  
 ysAlaLeuGluHisAlaLysThrHisProSerSerArgAlaTyrValGlnLysLeuAspAspArgLysLeuLysG1  
 uHisTyrLeuAsnThrGluGlyGlySerAlaSerAlaHisThrValGluThrAlaGlnAsnLeuTyrAsnGlnAla  
 LeuLysHisTyrLysSerGlyArgPheSerAlaAlaAlaSerLeuLeuLysGlyAlaAspGlyGlyAspGlyGlyS  
 erIleAlaGlnArgSerMetTyrLeuLeuGlnSerArgAlaArgMetGlyAsnCysGluSerValIleGluI  
 eGlyGlyArgTyrAlaAsnArgPhelysAspSerProThrAlaProGluAlaMetPheLysIleGlyGluCysGln  
 TyrArgLeuGlnLysAspIleAlaArgAlaThrTrpArgSerLeuIleGlnThrTyrProGlySerProAlaA  
 laLysArgAlaAlaAlaValArgLysArg-238

**Antigenic Index - Jameson-Wolf**

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1-MetLysThrLysLeuProLeuPheIleIleTrpLeuSerValSerAlaAlaCysSerSerProValSerArgAsnIleGlnAspMetArgLeuGluProGlnAlaGluAlaGlySerSerAspAlaIleProTyrProValProThrLeuGlnAspArgLeuAspTyrLeuGluGlyThrLeuValArgLeuSerAsnGluValGluThrLeuAsnGlyLysValLysAlaLeuGluHisAlaLysThrHisProSerSerArgAlaTyrValGlnLysLeuAspAspArgLysLeuLysGluHistYrLeuAsnThrGluGlyGlySerAlaSerAlaHisThrValGluThrAlaGlnAsnLeuTyrAsnGlnAlaLeuLysHisTyrLysSerGlyArgPheSerAlaAlaAlaSerLeuLeuLysGlyAlaAspGlyGlyAspGlyGlySerIleAlaGlnArgSerMetTyrLeuLeuGlnSerArgAlaArgMetGlyAsnCysGluSerValIleGluIleGlyGlyArgTyrAlaAsnArgPheLysAspSerProThrAlaProGluAlaMetPheLysIleGlyGluCysGlnTyrArgLeuGlnGlnLysAspIleAlaArgAlaThrTrpArgSerLeuIleGlnThrTyrProGlySerProAlaAlaLysArgAlaAlaAlaAlaValArgLysArg-238

**Hydrophilic Regions - Hopp-Woods**

1-MetLysThrLysLeuProLeuPheIleIleTrpLeuSerValSerAlaAlaCysSerSerProValSerArgAsnIleGlnAspMetArgLeuGluProGlnAlaGluAlaGlySerSerAspAlaIleProTyrProValProThrLeuGlnAspArgLeuAspTyrLeuGluGlyThrLeuValArgLeuSerAsnGluValGluThrLeuAsnGlyLysValLysAlaLeuGluHisAlaLysThrHisProSerSerArgAlaTyrValGlnLysLeuAspAspArgLysLeuLysGluHistYrLeuAsnThrGluGlyGlySerAlaSerAlaHisThrValGluThrAlaGlnAsnLeuTyrAsnGlnAlaLeuLysHisTyrLysSerGlyArgPheSerAlaAlaAlaSerLeuLeuLysGlyAlaAspGlyGlyAspGlyGlySerIleAlaGlnArgSerMetTyrLeuLeuGlnSerArgAlaArgMetGlyAsnCysGluSerValIleGluIleGlyGlyArgTyrAlaAsnArgPheLysAspSerProThrAlaProGluAlaMetPheLysIleGlyGluCysGlnTyrArgLeuGlnGlnLysAspIleAlaArgAlaThrTrpArgSerLeuIleGlnThrTyrProGlySerProAlaAlaLysArgAlaAlaAlaAlaValArgLysArg-238

a790

**AMPHI Regions - AMPHI**

10-GluAlaAlaAlaAlaGluVal-15  
 44-GlyAsnGlnThrCysSerArgTyrSerAsn-53  
 89-LysGlnAlaAlaValThr-93  
 103-ThrGlnAlaTyrAsnGluMetThrLysSerVal-113  
 166-PheAlaArgThrGlyLysLeu-172  
 174-GlySerPheAspLeuPheAlaSerVal-182  
 253-ProSerGluAlaLeuAsp-258  
 290-ThrAlaProAspValTrpThrVal-297  
 320-PheLeuArgPheTrpGlnAlaThrArgGlyIle-330

**Antigenic Index - Jameson-Wolf**

1-MetAlaArgArgSerLysThrPheGluGluAlaAlaAlaGluValGluGluArgPheGlyHisArgGlyIleLyss-25  
 30-GluGlyThrAlaLysProCysVal-37  
 39-AsnCysProLysHisGlyAsnGlnThrCysSerArgTyrSer-52  
 57-GlySerSerTrpGlyCysProSerCysGlyAsnGluGlnAlaAla-71  
 77-ThrLeuArgLysAsnHisIle-83  
 95-MetThrLysGlnGluArgIleThr-102  
 123-AspValGlnGlyAspThrThrIle-130  
 134-HisThrHisThrHisAsnHisSerAspAlaAspGlyLysAlaLeuSer-149  
 152-LeuThrProArgProLeuLeuSerAspArgGlnAla-163  
 167-AlaArgThrGlyLysLeuThrGly-174  
 194-MetProAspThrSerMet-199  
 201-ProValIleGluLysGlyAsp-207  
 213-ProArgMetArgProAlaAspGluAspIleVal-223  
 227-LeuSerAspLysArgLeuVal-233  
 248-TyrGlnThrGlyArgProSerGluAlaLeuAspLeuProGluGly-262  
 270-LeuGluSerLysAsnGlyLeuCysProProHisArgGlnGluGlyVal-285  
 301-SerAlaSerLysThrSerCysThrArgProThrAlaAlaArgLysSerAla-317  
 326-AlaThrArgGlyIleProLysThrArgAsnProAsnAsnAlaCys-343

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**Hydrophilic Regions - Hopp-Woods**

1-MetAlaArgArgSerLysThrPheGluGluAlaAlaAlaGluValGluGluArgPheGlyHisArgGlyIleLy  
 s-25  
 65-CysGlyAsnGluGlnAlaAla-71  
 77-ThrLeuArgLysAsnHisIle-83  
 96-ThrLysGlnGluArgIleThr-102  
 139-AsnHisSerAspAlaAspGlyLysAlaLeuSer-149  
 157-LeuLeuSerAspArgGlnAla-163  
 168-ArgThrGlyLysLeu-172  
 202-ValIleGluLysGlyAsp-207  
 213-ProArgMetArgProAlaAspGluAspIleVal-223  
 227-LeuSerAspLysArgLeuVal-233  
 251-GlyArgProSerGluAlaLeuAspLeuProGlu-261  
 270-LeuGluSerLysAsnGlyLeu-276  
 280-HisArgGlnGlyVal-285  
 301-SerAlaSerLysThrSerCysThrArgProThrAlaAlaArgLysSerAla-317  
 328-ArgGlyIleProLysThrArgSerTrpArgAsn-338  
**a900-2**  
**AMPHI Regions - AMPHI**  
 9-ValValAlaPheAlaArgPhe-15  
 36-ValGlyLysHisPheArgLysPheCysArgPheArg-47  
 62-ValGlyLeuLeuArgLeuAlaArgLeuPheHisIleGlyAspAspPheValAspArgPheLeuGlyPhePhe-  
 85  
 120-GlnCysGluGluPheProGluAlaValValGluAla-131  
 198-HisGlnThrLeuGlyGlyAspAlaGly-206  
 210-ValGlnPheHisHisPheGly-216  
 233-GlyLysProSerGlyGlyAsnGlyLeuGlyGlyLeuValAsnHisLeuArgLeuValAla-252  
 268-IleArgValLeuArgArgAlaAspGlyGly-277  
  
 279-AspSerThrAspValValAlaGlnMet-287

**Antigenic Index - Jameson-Wolf**

1-LeuArgArgValGlyGlyGln-7  
 20-ValAspPheArgArgGlnLys-26  
 38-LysHisPheArgLysPheCysArgPheArgArgGlyGluSer-52

56-PheLysGlnArgAla-60  
 74-GlyAspAspPheValAspArg-80  
 88-PheProLysArgAsnGlyValAla-95  
 105-GlnThrAsnGlnGlu-109  
 118-PheGlyGlnCysGluGluPhePro-125  
 155-GluHisGluAsnValGlySerHisGluAspArgValAla-167  
 201-LeuGlyGlyAspAlaGlyGlnAsnPro-209  
 229-ValGluSerAlaGlyLysProSerGlyGlyAsnGly-240  
 252-AlaPheAspAspThrValValIleGlyGluGluGluGlyPheGly-267  
 270-ValLeuArgArgAlaAspGlyGlyAlaAspSerThrAsp-282  
 285-AlaGlnMetArgAspAlaGlyGly-292

311-MetProSerGluArgGluLysAspAlaProIle-321  
 323-ProAspLeuProProThrSerSerArgGlnGlnThr-334

**Hydrophilic Regions - Hopp-Woods**

1-LeuArgArgValGly-5  
 20-ValAspPheArgArgGlnLys-26

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38-LysHisPheArgLysPheCysArgPheArgArgArgGlyGluSer-52

89-ProLysArgAsnGly-93  
 120-GlnCysGluGluPhePro-125  
 155-GluHisGluAsnValGlySerHisGluAspArgValAla-167  
 201-LeuGlyGlyAspAlaGlyGln-207  
 231-SerAlaGlyLysProSerGly-237  
 257-ValValIleGlyGluGluGluGlyPheGly-267  
 270-ValLeuArgArgAlaAspGlyGlyAlaAspSerThrAsp-282  
 285-AlaGlnMetArgAspAlaGly-291  
 311-MetProSerGluArgGluLysAspAlaProIle-321  
 326-ProProThrSerSerArgGlnGln-333  
**a901**  
**AMPHI Regions - AMPHI**  
 20-GlyLeuPheThrValLeuGly-26  
 55-ValSerLeuThrGluIlePheSerLysSer-64

66-GluAlaPheAlaGluIleTyrAsp-73  
 84-AlaPheLeuAlaGlyMetGlyGlyIleAlaLeuIle-95

97-ArgLeuValProAsnProHisGluThrLeuAsp-107  
 124-ValGlyMetMetAlaAlaPhe-130  
 136-AsnPheProGluGlyLeuAlaThrPhePheAlaThrLeuGlu-149  
 164-HisAsnIleProGluGlyIleSer-171  
 190-CysLeuLeuSerGlyLeuAlaGluProLeuGlyAlaAla-202  
 217-PheGlySerValPheGlyValIleAlaGlyValMet-228  
 243-TyrSerAspGlyHisGlu-248

#### Antigenic Index - Jameson-Wolf

1-MetProAspPheSerMet-6  
 33-SerLysThrProAsnProArgVal-40  
 61-PheSerLysSerSerGluAlaPhe-68  
 71-IleTyrAspLysAspHisAla-77  
 98-LeuValProAsnProHisGluThrLeuAspAlaGlnAspProSerPheGlnGluSerLysArgArgHisIleA  
 la-122  
 136-AsnPheProGluGly-140  
 179-AlaThrArgSerArgLysLysThr-186  
 193-SerGlyLeuAlaGluProLeuGly-200  
 235-GluLeuLeuProAlaAlaLysArgTyrSerAspGlyHisGluThr-249

#### Hydrophilic Regions - Hopp-Woods

61-PheSerLysSerSerGluAlaPhe-68  
 71-IleTyrAspLysAspHisAla-77  
 102-ProHisGluThrLeuAspAlaGlnAspProSerPheGlnGluSerLysArgArgHisIleAla-122  
 180-ThrArgSerArgLysLysThr-186  
 235-GluLeuLeuProAlaAlaLysArgTyrSerAspGlyHisGlu-248  
**a902**

#### AMPHI Regions - AMPHI

1-LeuHisPheGlnArgIleIleLysCysSerGluGlyIleTrpAlaValGlyAlaArgProThrValGlyPhePh  
 eGlyLysSerPhylsIleThrCysLysHisValValLeuArgArgArgThrValGlnAlaValAspPheThrThr  
 CysLeuPheAlaValGlyHisPheValAspValProAlaTyrValPheAlaCysAspAlaHisThrGlyGlyValA  
 laValLysArgValHisGlySerAspValValGlnAsnSerGlyGlyThrPheCysGlnThrGlnGlyArgArgAs  
 nThrValPheGlyValMetPheGlnIleAlaGluGluProArgSerAlaLeuArgAlaAlaProTyrHisAsnAla  
 ValCysGlyLeuPheGluAspGlyLeuGlyPheLeuArgArgGlyAsnValAlaValAspProAspArgAspV

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alGlnThrAlaPheGlyPheGlyAsnGlnValValSerArgPheAlaPheValHisLeuArgAlaArgAlaSerVa  
lAspGlyLysGlyGlyAsnAlaAlaIlePheGlyAspPheGlyAspAspGlyGlnValLeuMetValValPro  
ThrGlnThrGlyPheGluglyAsnGlyTyrAlaArgArgPheAspHisArgLeuGlnAsnGlyGlyAsnGlnArgL  
euValLeuHisGlnArgAlaThrGlyLeuAspIleAlaAspPhePheSerGlyThrAlaHisValAspValAspLy  
sLeuArgProLysIleAspValValThrArgGlyIleArgHisLeuLeuArgIleAlaSerGlyAsnLeuHisGly  
AsnAsnAlaAlaPheIleGlyLysIleAlaAlaValGlnGlyPheSerSerIleSerGluArgArgValAlaGlyG  
lnHisPheAlaHisArgProThrCysAlaLysIleSerAlaLysSerAlaGluArgPheValGlyAsnAlaArgHi  
sArgArgLysCysAspGlyValValAspLysIleAlaAlaAspValHisAsnGlySerAlaPheGlnLysSerThr  
ProLeuTyrIlePhe-359

**Antigenic Index - Jameson-Wolf**

1-LeuHisPheGlnArgIleIleLysCysSerGluGlyIleTrpAlaValGlyAlaArgProThrValGlyPhePh  
eGlyLysSerPheLysIleThrCysLysHisValValLeuArgArgArgThrValGlnAlaValAspPheThrThr  
CysLeuPheAlaValGlyHisPheValAspValProAlaTyrValPheAlaCysAspAlaHisThrGlyValA  
laValLysArgValHisGlySerAspValGlnAsnGlyGlyPheCysGlnThrGlnGlyArgArgAs  
nThrValPheGlyValMetPheGlnIleAlaGluGluProArgSerAlaLeuArgAlaAlaProTyrHisAsnAla  
ValCysGlyGlyLeuPheGluAspGlyLeuGlyPheLeuArgArgGlyAsnValAlaValAspProAspArgAspV  
alGlnThrAlaPheGlyPheGlyAsnGlnValValSerArgPheAlaPheValHisLeuArgAlaArgAlaSerVa  
lAspGlyLysGlyGlyAsnAlaAlaIlePheGlyAspPheGlyAspAspGlyGlnValLeuMetValValPro  
ThrGlnThrGlyPheGluGlyAsnGlyTyrAlaArgArgPheAspHisArgLeuGlnAsnGlyGlyAsnGlnArgL  
euValLeuHisGlnArgAlaThrGlyLeuAspIleAlaAspPhePheSerGlyThrAlaHisValAspValAspLy  
sLeuArgProLysIleAspValValThrArgGlyIleArgHisLeuLeuArgIleAlaSerGlyAsnLeuHisGly  
AsnAsnAlaAlaPheIleGlyLysIleAlaAlaValGlnGlyPheSerSerIleSerGluArgArgValAlaGlyG  
lnHisPheAlaHisArgProThrCysAlaLysIleSerAlaLysSerAlaGluArgPheValGlyAsnAlaArgHi  
sArgArgLysCysAspGlyValValAspLysIleAlaAlaAspValHisAsnGlySerAlaPheGlnLysSerThr  
ProLeuTyrIlePhe-359

**Hydrophilic Regions - Hopp-Woods**

1-LeuHisPheGlnArgIleIleLysCysSerGluGlyIleTrpAlaValGlyAlaArgProThrValGlyPhePh  
eGlyLysSerPheLysIleThrCysLysHisValValLeuArgArgArgThrValGlnAlaValAspPheThrThr  
CysLeuPheAlaValGlyHisPheValAspValProAlaTyrValPheAlaCysAspAlaHisThrGlyValA  
laValLysArgValHisGlySerAspValGlnAsnSerGlyGlyPheCysGlnThrGlnGlyArgArgAs  
nThrValPheGlyValMetPheGlnIleAlaGluGluProArgSerAlaLeuArgAlaAlaProTyrHisAsnAla  
ValCysGlyLeuPheGluAspGlyLeuGlyPheLeuArgArgGlyAsnValAlaValAspProAspArgAspV  
alGlnThrAlaPheGlyPheGlyAsnGlnValValSerArgPheAlaPheValHisLeuArgAlaArgAlaSerVa  
lAspGlyLysGlyGlyAsnAlaAlaIlePheGlyAspPheGlyAspAspGlyGlnValLeuMetValValPro  
ThrGlnThrGlyPheGluGlyAsnGlyTyrAlaArgArgPheAspHisArgLeuGlnAsnGlyGlyAsnGlnArgL  
euValLeuHisGlnArgAlaThrGlyLeuAspIleAlaAspPhePheSerGlyThrAlaHisValAspValAspLy  
sLeuArgProLysAlaAspValValThrArgGlyIleArgHisLeuLeuArgIleAlaSerGlyAsnLeuHisGly  
AsnAsnAlaAlaPheIleGlyLysIleAlaAlaValGlnGlyPheSerSerIleSerGluArgArgValAlaGlyG  
lnHisPheAlaHisArgProThrCysAlaLysIleSerAlaLysSerAlaGluArgPheValGlyAsnAlaArgHi  
sArgArgLysCysAspGlyValValAspLysIleAlaAlaAspValHisAsnGlySerAlaPheGlnLysSerThr  
ProLeuTyrIlePhe-359

a903-1

**AMPHI Regions - AMPHI**

1-MetLysPhePheProAlaProCysLeuLeuValIleLeuAlaValIleProLeuLysThrLeuAlaAlaAspG  
lAsnAspAlaGluLeuIleArgSerMetGlnArgGlnGlnHisIleAspAlaGluLeuLeuThrAspAlaAsnVal  
ArgPheGluGlnProLeuGluLysAsnAsnTyrValLeuSerGluAspGluThrProCysThrArgValAsnTyrI  
leSerLeuAspAspLysThrAlaArgLysPheSerPheLeuProSerValLeuMetLysGluThrAlaPheLysTh  
rGlyMetCysLeuGlySerAsnAsnLeuSerArgLeuGlnLysAlaAlaGlnGlnIleLeuIleValArgGlyTyr  
LeuThrSerGlnAlaIleGlnProGlnAsnMetAspSerGlyIleLeuLysLeuArgValSerAlaGlyGluI  
leGlyAspIleArgTyrGluGluLysArgAspGlyLysSerAlaGluGlySerIleSerAlaPheAsnAsnLysPh  
eProLeuTyrArgAsnLysIleLeuAsnLeuArgAspValGluGlnGlyLeuGluAsnLeuArgArgLeuProSer  
ValLysThrAspIleGlnIleIleProSerGluGluGlyLysSerAspLeuGlnIleLysTrpGlnGlnAsnL  
ysProIleArgPheSerIleGlyIleAspAspAlaGlyGlyLysThrThrGlyLysTyrGlnGlyAsnValAlaLe

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uSerPheAspAsnProLeuGlyLeuSerAspLeuPheTyrValSerTyrGlyArgGlyLeuValHisLysThrAspLeuThrAspAlaThrGlyThrGluThrGluSerGlySerArgSerTyrSerValHisTyrSerValProValLysLysTrpLeuPheSerPheAsnHisAsnGlyHisArgTyrHisGluAlaThrGluGlyTyrSerValAsnTyrAspTyrAsnGlyLysGlnTyrGlnSerSerLeuAlaAlaGluArgMetLeuTrpArgAsnArgPheHisLysThrSerValGlyMetLysLeuTrpThrArgGlnThrTyrLysTyrIleAspAspAlaGluIleGluValGlnArgArgSerAlaGlyTyrGluAlaGluLeuArgHisArgAlaTyrLeuAsnArgTrpGlnLeuAspGlyLysLeuSerTyrLysArgGlyThrGlyMetArgGlnSerMetProAlaProGluGluAsnGlyGlyGlyThrIleProGlyThrSerArgMetLysIleIleThrAlaGlyLeuAspAlaAlaGlyProPheMetLeuGlyLysGlnGlnPhePheTyrAlaThrAlaIleGlnAlaGlnTrpAsnLysThrProLeuValAlaGlnAspLysLeuSerIleGlySerArgTyrThrValArgGlyPheAspGlyGluGlnSerLeuPheGlyGluArgGlyPheTyrTrpGlnAsnThrLeuThrTrpTyrPheHisProAsnHisGlnPheTyrLeuGlyAlaAspTyrGlyArgValSerGlyGlySerAlaGlnTyrValSerGlyLysGlnLeuMetGlyAlaValValGlyPheArgGlyGlyHistysValGlyGlyMetPheAlaTyrAspLeuPheAlaGlyLysSProLeuHisLysProLysGlyPheGlnThrThrAsnThrValTyrGlyPheAsnLeuAsnTyrSerPhe-580

**Antigenic Index - Jameson-Wolf**

1-MetLysPhePheProAlaProCysLeuLeuValIleLeuAlaValIleProLeuLysThrLeuAlaAlaAspGluAsnAspAlaGluLeuIleArgSerMetGlnArgGlnGlnHisIleAspAlaGluLeuLeuThrAspAlaAsnValArgPheGluGlnProLeuGluLysAsnTyrValLeuSerGluAspGluThrProCysThrArgValAsnTyrIleSerLeuAspAspLysThrAlaArgLysPheSerPheLeuProSerValLeuMetLysGluThrAlaPheLysThrGlyMetCysLeuGlySerAsnLeuSerArgLeuGlnLysAlaAlaGlnGlnIleLeuIleValArgGlyTyrLeuThrSerGlnAlaIleIleGlnProGlnAsnMetAspSerGlyIleLeuLysLeuArgValSerAlaGlyGluIleGlyAspIleArgTyrGluGlyLysAspGlyLysSerAlaGluGlySerIleSerAlaPheAsnAsnLysPheProLeuTyrArgAsnLysIleLeuAsnLeuArgAspValGluGlyLeuGluAsnLysLeuArgArgLeuProSerValLysThrAspIleGlnIleIleProSerGluGluGlyLysSerAspLeuGlnIleLysTrpGlnGlnAsnLysProIleArgPheSerIleGlyIleAspAlaGlyGlyLysThrHrGlyLysTyrGlnGlyAsnValAlaLeuSerPheAsnProLeuGlyLeuSerAspLeuPheTyrValSerTyrGlyArgGlyLeuValHisThrAspLeuThrAspAlaThrGlyThrGluSerGlySerArgSerTyrSerValHisTyrSerValProValProValLysLysTrpLeuPheSerAsnHisAsnDlyLysHisArgTyrHisGluAlaThrGluGlyTyrSerValAsnTyrAspTyrAsnGlyLysGlnTyrGlnSerSerLeuAlaAlaGluArgMetLeuTrpArgAsnArgPheHisLysThrSerValGlyMetLysLeuTrpThrArgGlnThrTyrLysTyrIleAspAspAlaGluIleGluValGlnArgArgSerA

**Hydrophilic Regions - Hopp-Woods**

1-MetLysPhePheProAlaProCysLeuLeuValIleLeuAlaValIleProLeuLysThrLeuAlaAlaAspGluAsnAspAlaGluLeuIleArgSerMetGlnArgGlnGlnHisIleAspAlaGluLeuLeuThrAspAlaAsnValArgPheGluGlnProLeuGluLysAsnAsnTyrValLeuSerGluAspGluThrProCysThrArgValAsnTyrIleSerLeuAspAspLysThrAlaArgLysPheSerPheLeuProSerValLeuMetLysGluThrAlaPheLysThrGlyMetCysLeuGlySerAsnAsnLeuSerArgLeuGlnLysAlaAlaGlnGlnIleLeuIleValArgGlyTyrLeuThrSerGlnAlaIleIleGlnProGlnAsnMetAspSerGlyIleLeuLysLeuArgValSerAlaGlyGluIleGlyAspIleArgTyrGluGluLysArgAspGlyLysSerAlaGluGlySerIleSerAlaPheAsnAsnLysPheProLeuTyrArgAsnLysIleLeuAsnLeuArgAspValGluGlnGlyLeuGluAsnLeuArgArgLeuProSerValLysThrAspIleGlnIleIleProSerGluGluGluGlyLysSerAspLeuGlnIleLysTrpGlnGlnAsnLysProIleArgPheSerIleGlyIleAspAlaGlyGlyLysThrHrGlyLysTyrGlnGlyAsnValAlaLeuSerPheAsnProLeuGlyLeuSerAspLeuPheTyrValSerTyrGlyArgGlyLeuValHisLysThrAspLeuThrAspAlaThrGlyThrGluThrGluSerGlySerArgSerTyrSerValHisTyrSerValProValProValLysLysTrpLeuPheSerPheAsnHisAsnGlyHisArgTyrHisGluAlaThrGluGlyTyrSerValAsnTyrAspTyrAsnGlyLysGlnTyrGlnSerSerLeuAlaAlaGluArgMetLeuTrpArgAsnArgPheHisLysThrSerValGlyMetLysLeuTrpThrArgGlnThrTyrLysTyrIleAspAspAlaGluIleGluValGlnArgArgSerA

-628-

laGlyTrpGluAlaGluLeuArgHisArgAlaTyrLeuAsnArgTrpGlnLeuAspGlyLysLeuSerTyrLysAr  
gGlyThrGlyMetArgGlnSerMetProAlaProGluGluAsnGlyGlyGlyThrIleProGlyThrSerArgMet  
LysIleIleThrAlaGlyLeuAspAlaAlaAlaProPheMetLeuGlyLysGlnGlnPhePheTyrAlaThrAlaI  
leGlnAlaGlnTrpAsnLysThrProLeuValalaGlnAspLyseSerIleGlySerArgTyrThrValArgGl  
yPheAspGlyGluGlnSerLeuPheGlyGluArgGlyPheTyrTrpGlnAsnThrLeuThrTyrTyrPheHisPro  
AsnHisGlnPheTyrLeuGlyAlaAspTyrGlyArgValSerGlyGluSerAlaGlnTyrValSerGlyLysGlnL  
euMetGlyAlaValValGlyPheArgGlyGlyHisLysValGlyGlyMetPheAlaTyrAspLeuPheAlaGlyLy  
sProLeuHisLysProLysGlyPheGlnThrThrAsnThrValTyrGlyPheAsnLeuAsnTyrSerPhe-580  
a904

**AMPHI Regions - AMPHI**

1-MetMetGlnHisAsnArgPhePheAlaValGlyAlaGlyGlyAspAspGlyAspArgArgThrAlaAspPhePh  
eAsnProPheGlnIleCysPheGlyIleGlyArgCysValValAlaPheHisAlaGluSerGlyPheAlaProThr  
GlyHisGlyPheValAsnArgLeuAlaGlyPheTyrArgIleArgAlaAlaArgGlnAspValGlyPheAlaAlaV  
alGlyGlnPheValAlaAspAlaAspIleAspGlyPheAsnAlaValHisTyrIleGluPheGlyAsnThrHisTh  
rGlyAsnAlaValAspLeuAspGlyAlaPheGlnGlyGlyIleLysProAlaAlaAlaCysAlaSerGly  
TyrArgThrGluPheValSerAlaPheCysGlnThrCysSerAspPheValGluGlnPheGlyArgGluArgAlaA  
rgThrAspAlaArgGlyIleGlyPheAspAspAlaGlnAsnIleIleGlnHisLeuArgAlaTyrAlaArgAlaC  
sArgSerArgAlaGlyGluAlaValGlyArgSerAsnGluGlyValSerAlaValValAspValGlnArgThr  
LeuArgAlaPheGlyGlnPheAlaValPheValPheValGlnHisAlaGlyHisValGlyAsnHisA  
rgArgAsnAlaArgArgAspPheAspAsnArgHisValPheArgPheHisArgLeuGlyIleValGlnMe  
tLeuGlnLeuAspValValIleSerLysAspGlyIleGlnPhePheThrGlnPhePheArgMetGlnGlnIleGly  
GlyAlaAsnGlyAlaAlaCysHisPheValPheValGlyArgAlaAspAlaAlaAlaGlyArgAlaAspPheAlaP  
heAlaAlaArgCysPheSerGlyLeuValGluArgAspValIleArgGlnAspGlnArgAlaGlyArgArgAspPh  
eGlnThrAlaPheAspValPheHisAlaCysArgValGlnLeuValAspPheGlyGlyAsp  
AspAsnAlaArgThrAspGluAlaValGlnThrPheMetGlnAspAlaAlaArgAsnGlnAlaGlnAsnGlyPheP  
heAlaAlaAspAsnGlnGlyMetThrArgIleValAlaAlaLeuGluAlaHisHisAlaSerGlyPhePheArgGl  
nProValAsnAspPheThrPheThrLeuValAlaProLeuCysAlaAspTyrTyrAsnIlePheSerHisSerHis  
IleThrXxxArgTyr-435

**Antigenic Index - Jameson-Wolf**

1-MetMetGlnHisAsnArgPhePheAlaValGlyAlaGlyGlyAspAspGlyAspArgArgThrAlaAspPhePh  
eAsnProPheGlnIleCysPheGlyIleGlyArgCysValValAlaPheHisAlaGluSerGlyPheAlaProThr  
GlyHisGlyPheValAsnArgLeuAlaGlyPheTyrArgIleArgAlaAlaArgGlnAspValGlyPheAlaAlaV  
alGlyGlnPheValAlaAspAlaAspIleAspGlyPheAsnAlaValHisTyrIleGluPheGlyAsnThrHisTh  
rGlyAsnAlaValAspLeuAspGlyAlaPheGlnGlyGlyIleLysProAlaAlaAlaCysAlaSerGly  
TyrArgThrGluPheValSerAlaPheCysGlnThrCysSerAspPheValGluGlnPheGlyArgGluArgAlaA  
rgThrAspAlaArgGlyIleGlyPheAspAspAlaGlnAsnIleIleGlnHisLeuArgAlaTyrAlaArgAlaC  
sArgSerArgAlaGlyGluAlaValGlyArgSerAsnGluGlyValSerAlaValValAspValGlnGlnArgThr  
LeuArgAlaPheLysGlnGlnPhePheAlaValPheValPhePheValGlnHisAlaGlyHisValGlyAsnHisA  
rgArgAsnAlaArgArgAspPheAspAsnArgHisValPheArgPheHisArgLeuGlyIleValGlnMe  
tLeuGlnLeuAspValValIleSerLysAspGlyIleGlnPhePheThrGlnPhePheArgMetGlnGlnIleGly  
GlyAlaAsnGlyAlaAlaCysHisPheValPheValGlyArgAlaAspAlaAlaAlaGlyArgAlaAspPheAlaP  
heAlaAlaArgCysPheSerGlyLeuValGluArgAspValIleArgGlnAspGlnArgAlaGlyArgArgAspPh  
eGlnThrAlaPheAspValPheHisAlaCysArgValGlnLeuValAspPheAlaCinGlyPheGlyGlyAsp  
AspAsnAlaArgThrAspGluAlaValGlnThrPheMetGlnAspAlaAlaArgAsnGlnAlaGlnAsnGlyPheP  
heAlaAlaAspAsnGlnGlyMetThrArgIleValAlaAlaLeuGluAlaHisHisAlaSerGlyPhePheArgGl  
nProValAsnAspPheThrPheThrLeuValAlaProLeuCysAlaAspTyrTyrAsnIlePheSerHisSerHis  
IleThrXxxArgTyr-435

**Hydrophilic Regions - Hopp-Woods**

1-MetMetGlnHisAsnArgPhePheAlaValGlyAlaGlyGlyAspAspGlyAspArgArgThrAlaAspPhePh  
eAsnProPheGlnIleCysPheGlyIleGlyArgCysValValAlaPheHisAlaGluSerGlyPheAlaProThr  
GlyHisGlyPheValAsnArgLeuAlaGlyPheTyrArgIleArgAlaAlaArgGlnAspValGlyPheAlaAlaV  
alGlyGlnPheValAlaAspAlaAspIleAspGlyPheAsnAlaValHisTyrIleGluPheGlyAsnThrHisTh  
rGlyAsnAlaValAspLeuAspGlyAlaPheGlnGlyGlyIleLysProAlaAlaCysAlaSerGly

-629-

TyrArgThrGluPheValSerAlaPheCysGlnThrCysSerAspPheValGluGlnPheGlyArgGluArgAlaAargThrAspAlaArgGlyIleGlyPheAspAspAlaGlnAsnIleIleGlnHisLeuArgAlaTyrAlaArgAlaCysArgSerArgAlaGlyGluAlaValGlyArgSerAsnGluGlyValSerAlaValValAspValGlnGlnArgThrLeuArgAlaPheLysGlnGlnPhePheAlaValPheValPhePheValGlnHisIleGlyHisValGlyAsnHisArgArgAsnAlaArgArgAspPheAspAsnArgHiSValPheArgPheHisArgLeuGlyIleValGlnMeIleLeuGlnLeuAspValValIleSerLysAspGlyIleGlnPhePheThrGlnPhePheArgMetGlnGlnIleGlyGlyAlaAsnGlyAlaAlaCysHisPheValGlyArgAlaAspAlaIlaAlaGlyArgAlaAspPheAlaPheAlaArgCysPheSerGlyLeuValGluArgAspValIleArgGlnAspGlnArgAlaGlyArgArgAspPhGlnThrAlaPheAspValPheHisIlaCysArgValGlnLeuValAspPheAlaGlnGlnGlyPheGlyGlyAspAspAsnAlaArgThrAspGluAlaValGlnThrPheMetGlnAspAlaAlaArgAsnGlnAlaGlnAsnGlyPhePheAlaAlaAspAsnGlnGlyMetThrArgIleValAlaAlaHisHisAlaSerGlyPhePheArgGlnProValAsnAspPheThrPheThrLeuValAlaProLeuCysAlaAspTyrTyrAsnIlePheSerHisSerHisIleThrXxxArgTyr-435

a907

**AMPHI Regions - AMPHI**

1-MetLysLysProThrAspThrLeuProValAsnLeuGlnArgArgArgLeuLeuCysAlaAlaGlyAlaLeuLeuLeuSerProLeuAlaGlnAlaGlyAlaGlnArgGluGluThrLeuAlaAspAspValAlaSerValMetArgSerSerValGlySerIleAsnProProArgLeuValPheAspAsnProLysGluGlyGluArgTrpLeuSerAlaMetSerAlaArgLeuAlaArgPheValProAspGluGluArgArgArgLeuLeuValAsnIleGlnTyrGluSerSerArgAlaGlyLeuAspThrGlnIleLeuLeuIleGluValGluSerAlaPheArgGlnTyrAlaIleSerGlyValGlyAlaArgGlyLeuMetGlnMetProPheTrpLysAsnTyrIleGlyLysProAlaHisAsnLeuPheAspIleArgThrAsnLeuArgTyrGlyCysThrIleLeuArgHisTyrArgAsnLeuGluLysGlyAsnIleValArgAlaLeuAlaArgPheAsnGlySerLeuGlySerAsnLysTyrProAsnAlaValLeuGlyAlaTrpArgAsnArgTrpGlnTrpArg-207

**Antigenic Index - Jameson-Wolf**

1-MetLysProThrAspThrLeuProValAsnLeuGlnArgArgArgLeuLeuCysAlaAlaGlyAlaLeuLeuLeuSerProLeuAlaGlnAlaGlyAlaGlnArgGluGluThrLeuAlaAspAspValAlaSerValMetArgSerSerValGlySerIleAsnProProArgLeuValPheAspAsnProLysGluGlyGluArgTrpLeuSerAlaMetSerAlaArgLeuAlaArgPheValProAspGluGluGluArgArgArgLeuLeuValAsnIleGlnTyrGluSerSerArgAlaGlyLeuAspThrGlnIleLeuGlyLeuIleGluValGluSerAlaPheArgGlnTyrAlaIleSerGlyValGlyAlaArgGlyLeuMetGlnValMetProPheTrpLysAsnTyrIleGlyLysProAlaHisAsnLeuPheAspIleArgThrAsnLeuArgTyrGlyCysThrIleLeuArgHisTyrArgAsnLeuGluLysGlyAsnIleValArgAlaLeuAlaArgPheAsnGlySerLeuGlySerAsnLysTyrProAsnAlaValLeuGlyAlaTrpArgAsnArgTrpGlnTrpArg-207

**Hydrophilis Regions - Hopp-Woods**

1-MetLysProThrAspThrLeuProValAsnLeuGlnArgArgArgLeuLeuCysAlaAlaGlyAlaLeuLeuLeuSerProLeuAlaGlnAlaGlyAlaGlnArgGluGluThrLeuAlaAspAspValAlaSerValMetArgSerSerValGlySerIleAsnProProArgLeuValPheAspAsnProLysGluGlyGluArgTrpLeuSerAlaMetSerAlaArgLeuAlaArgPheValProAspGluGluGluArgArgArgLeuLeuValAsnIleGlnTyrGluSerSerArgAlaGlyLeuAspThrGlnIleLeuGlyLeuIleGluValGluSerAlaPheArgGlnTyrAlaIleSerGlyValGlyAlaArgGlyLeuMetGlnValMetProPheTrpLysAsnTyrIleGlyLysProAlaHisAsnLeuPheAspIleArgThrAsnLeuArgTyrGlyCysThrIleLeuArgHisTyrArgAsnLeuGluLysGlyAsnIleValArgAlaLeuAlaArgPheAsnGlySerLeuGlySerAsnLysTyrProAsnAlaValLeuGlyAlaTrpArgAsnArgTrpGlnTrpArg-207

a908

**AMPHI Regions - AMPHI**

1-MetArgLysSerArgLeuSerGlnTyrLysGlnAsnLysLeuIleGluLeuPheValAlaGlyValThrAlaArgThrAlaAlaLeuGluValGlyValAsnThrAlaAlaTyrPheHisArgLeuArgLeuIleTyrGlnAsnSerProHisLeuGluMetPheAspGlyGluValGluAspGlyGluSerTyrPheGlyGlyGlnArgLysGlyLysArgGlyArgGlyAlaAlaGlyLysValAlaValPheGlyLeuLeuLysArgAsnGlyLysValTyrThrValThrValProAsnThrGlnThrAlaThrLeuPheProIleIleArgGluGlnValLysProAspSerIleValTyrThrAspCysTyrArgSerTyrAspValLeuAspValArgGluPheSerHisPheSerPheAlaGluThrSerPheSerTyrGlnSerGlnHisThrPheCysArgThrLysProTyr-166

-630-

**Antigenic Index - Jameson-Wolf**

1-MetArgLysSerArgLeuSerGlnTyrLysGlnAsnLysLeuIleGluLeuPheValAlaGlyValThrAlaArgThrAlaAlaGluLeuValGlyValAsnLysAsnThrAlaAlaTyrTyrPheHisArgLeuArgLeuIleTyrGlnAsnSerProHisLeuGluMetPheAspGlyGluValGluAlaAspGluSerTyrPheGlyGlyGlnArgLysGlyLysArgGlyArgGlyAlaAlaGlyLysValAlaValPheGlyLeuLysArgAsnGlyLysValTyrThrValThrValProAsnThrGlnThrAlaThrLeuPheProIleIleArgGluGlnValLysProAspSerIleValTyrThrAspCysTyrArgSerTyrAspValLeuAspValArgGluPheSerHisPheSerPheAlaGluThrSerPheSerTyrGlnSerGlnHisThrPheCysArgThrThrLysProTyr-166

**Hydrophilic Regions - Hopp-Woods**

1-MetArgLysSerArgLeuSerGlnTyrLysGlnAsnLysLeuIleGluLeuPheValAlaGlyValThrAlaArgThrAlaAlaGluLeuValGlyValAsnLysAsnThrAlaAlaTyrTyrPheHisArgLeuArgLeuIleTyrGlnAsnSerProHisLeuGluMetPheAspGlyGluValGluAlaAspGluSerTyrPheGlyGlyGlnArgLysGlyLysArgGlyArgGlyAlaAlaGlyLysValAlaValPheGlyLeuLysArgAsnGlyLysValTyrThrValThrValProAsnThrGlnThrAlaThrLeuPheProIleIleArgGluGlnValLysProAspSerIleValTyrThrAspCysTyrArgSerTyrAspValLeuAspValArgGluPheSerHisPheSerPheAlaGluThrSerPheSerTyrGlnSerGlnHisThrPheCysArgThrThrLysProTyr-166

a909

**AMPHI Regions - AMPHI**

71-GlyAsnAsnAlaAspGlu-76

**Antigenic Index - Jameson-Wolf**

22-ThrTyrGlnAspGlyAsnGlyLysThrAlaValArgGlnLysTyrProAlaGly-39  
 45-GlnAspGlySerTyrSerLysAsnMetAsnTyrAsnGlnTyrArgProGluArgHisAla-64  
 68-AsnGlnThrGlyAsnAsnAlaAspGluGluHisArgGlnHisTrpGlnLysProLysPheGlnAsnArg-90

**Hydrophilic Regions - Hopp-Woods**

23-TyrGlnAspGlyAsnGlyLysThrAlaValArgGlnLysTyr-36  
 58-TyrArgProGluArgHisAla-64  
 72-AsnAsnAlaAspGluGluHisArgGlnHisTrpGln-83  
 85-ProLysPheGlnAsnArg-90

a910

**AMPHI Regions - AMPHI**

22-SerAlaGluArgGlnIle-27  
 39-LysAlaValLysMetLeuGlu-45  
 58-AspHisTrpGlyLysPro-63  
 69-AlaTyrLysAspGlyArg-74

**Antigenic Index - Jameson-Wolf**

19-AlaGlyAspSerAlaGluArgGlnIleTyr-28  
 30-AspProTyrPheGluGlnAsnArgThrLysAlaValLysMetLeuGluGlnArgGlyTyrGln-50  
 52-HisAspValAspAlaAspAspHisTrpGly-61  
 68-GluAlaTyrLysAspGlyArgGluTyrAsp-77  
 83-ProAspLeuLysIleIleLysGluGlnLeuAspArg-94

**Hydrophilic Regions - Hopp-Woods**

21-AspSerAlaGluArgGlnIleTyr-28  
 32-TyrPheGluGlnAsnArgThrLysAlaValLysMetLeuGluGlnArgGly-48  
 52-HisAspValAspAlaAspAspHisTrpGly-61  
 68-GluAlaTyrLysAspGlyArgGluTyrAsp-77  
 86-LysIleIleLysGluGlnLeuAspArg-94

a911

**AMPHI Regions - AMPHI**

6-LeuGluPheTrpValGlyLeuPhe-13  
 43-ValTyrAlaAspPheGlyAspIleGly-51

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97-ValSerAlaGlnIle-101  
 118-GlyAspThrGluAsnLeuAla-124  
 140-AsnLeuIleGlyLysPheMetThrSerPhe-149

**Antigenic Index - Jameson-Wolf**

1-MetLysLysAsnIle-5  
 35-GlyGlySerAspLysThrTyr-41  
 48-GlyAspIleGlyGlyLeuLysValAsnAlaProValLys-60  
 74-LeuAspProLysSerTyrGlnAlaArgValArgLeuAspLeuAspGlyLysTyrGlnPheSerSerAspVal-  
 97  
 103-ThrSerGlyLeuLeuGly-108  
 115-GlnGlnGlyAspThrGluAsn-122  
 149-PheAlaGluLysAsnAlaAspGlyGlyAsnAlaGluLysAlaAlaGlu-164

**Hydrophilic Regions - Hopp-Woods**

1-MetLysLysAsnIle-5  
 36-GlySerAspLysThr-40  
 74-LeuAspProLysSerTyrGlnAlaArgValArgLeuAspLeuAspGly-89  
 116-GlnGlyGlyAspThrGluAsn-122  
 149-PheAlaGluLysAsnAlaAspGlyGlyAsnAlaGluLysAlaAlaGlu-164  
 a912  
**AMPHI Regions - AMPHI**  
 24-ProAlaAspAlaValAsnGlnIle-31  
 38-ValLeuSerIleLeu-42  
 62-PheAspPheGlnArgMetThrAlaLeuAlaValGlyAsnProTrpArgThrAlaSerAspAlaGlnLys-84  
 89-LysGluPheGlnThrLeu-94  
 169-TyrArgAsnGlnPheGlyGluIleIleLysAlaLys-180

**Antigenic Index - Jameson-Wolf**

1-MetLysSerSer-5  
 29-AsnGlnIleArgGlnAsnAlaThrGln-37  
 42-LeuLysSerGlyAspAlaAsnThrAlaArgGlnLysAlaGluAla-56  
 74-AsnProTrpArgThrAlaSerAspAlaGlnLysGlnAlaLeuAlaLysGluPhe-91  
 104-LeuLysLeuLysAsnAlaAsnValAsnValLysAspAsnProIleValAsnLysGlyGlyLysGluIleIle  
 Val-128  
 130-AlaGluValGlyValProGlyGlnLysProValAsn-141  
 146-ThrTyrGlnSerGlyGlyLysTyrArgThr-155  
 169-TyrArgAsnGlnPhe-173  
 177-IleLysAlaLysGlyValAspGlyLeuIleAla-187  
 189-LeuLysAlaLysAsnGlySerLys-196

**Hydrophilic Regions - Hopp-Woods**

1-MetLysSerSer-5  
 31-IleArgGlnAsnAla-35  
 43-LysSerGlyAspAlaAsnThrAlaArgGlnLysAlaGluAla-56  
 78-ThrAlaSerAspAlaGlnLysGlnAlaLeuAlaLysGluPhe-91  
 104-LeuLysLeuLysAsn-108  
 110-AsnValAsnValLysAspAsnProIleVal-119  
 121-LysGlyGlyLysGluIleIleVal-128  
 134-ValProGlyGlnLysProValAsn-141  
 177-IleLysAlaLysGlyValAsp-183  
 189-LeuLysAlaLysAsnGlySerLys-196  
 a913  
**AMPHI Regions - AMPHI**  
 22-GluThrArgProAlaAspProTyrGluGlyTyrAsnArg-34

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53-ArgGlyTyrArgLysValAlaProLys-61  
 66-GlyValSerAsnPheAsnAsnLeuCysAspValValSer-79  
 107-LeuGlyGlyLeuIleAspIleAlaGlyAla-116  
 151-ValArgAspAlaLeuGlyThrGlyIleThrSerValTyrSer-164  
 193-AspLeuThrAspSerLeuAspGluIlaAla-202  
 238-LeuValGluSerAla-242  
 257-SerGluThrGlnAla-261

**Antigenic Index - Jameson-Wolf**

21-AlaGluThrArgProAlaAspProTyrGluGlyTyrAsn-33  
 39-PheAsnAspGlnAlaAspArgTyr-46  
 51-AlaAlaArgGlyTyrArgLysValAlaProLysProValArgAla-65  
 81-GlySerAsnIleLeu-85  
 87-LeuAspIleLysArgAlaSerGluAspLeuVal-97  
 117-GlyGlyIleProAspAsnLysAsnThrLeuGlyAsp-128  
 132-SerTrpGlyTrpLysAsnSerAsn-139  
 149-SerThrValArgAspAlaLeu-155  
 163-TyrSerProLysAsnIle-168  
 172-ThrProValGlyArgTrpGly-178  
 185-ValserThrArgGluGlyLeuLeuAspLeuThrAspSerLeuAspGluAlaAlaIleAspLysTyrSerTyr  
 ThrArgAspLeuTyrMet-214  
 216-ValArgAlaArgGlnThrGlyAlaThrProAlaGluGlyThrGluAspAsnIleAspIleAspGluLeuVal  
 GluSerAlaGluThrGlyAlaAla-247  
 250-AlaValGlnGluAspSerValSerGluThrGlnAlaGluAlaAlaGlyGluAlaGluThrGlnProGlyThr  
 GlnProGlyThrGlnPro-279

**Hydrophilic Regions - Hopp-Woods**

21-AlaGluThrArgProAlaAspProTyrGluGlyTyrAsn-33  
 40-AsnAspGlnAlaAsp-44  
 53-ArgGlyTyrArgLysValAlaProLysProValArg-64  
 87-LeuAspIleLysArgAlaSerGluAspLeuVal-97  
 118-GlyIleProAspAsnLysAsnThrLeu-126  
 150-ThrValArgAspAlaLeu-155  
 186-SerThrArgGluGlyLeuLeuAspLeuThrAspSerLeuAspGluAlaAlaIleAsp-204  
 216-ValArgAlaArgGlnThrGly-222  
 224-ThrProAlaGluGlyThrGluAspAsnIleAspIleAspGluLeuValGluSerAlaGluThrGlyAlaAla  
 -247  
 250-AlaValGlnGluAspSerValSerGluThrGlnAlaGluAlaAlaGlyGluAlaGluThrGlnPro-271  
**a914-2**

**AMPHI Regions - AMPHI**

6-LeuGlyIleLeuThrAlaCysAlaAlaMet-15  
 17-AlaPheAlaAspArgIleGlyAspLeu-25  
 65-PheGlnLysThrPheGlu-70  
 81-GlnLysValArgGlnAlaCys-87

**Antigenic Index - Jameson-Wolf**

18-PheAlaAspArgIleGlyAspLeuGluAlaArgLeuAlaGlnLeuGluHisArgValAlaVal-38  
 40-GluSerGlySerAsnThrValLys-47  
 50-LeuPheGlySerAsnSer-55  
 64-ProPheGlnLysThrPheGluAlaSerAspArgAsnGluGlyValAlaArgGlnLysValArgGlnAlaCysA  
 snArgGluThrSerAla-93  
 95-PheCysAspGluAlaIleArgCysArgLysPheAsp-107

**Hydrophilic Regions - Hopp-Woods**

18-PheAlaAspArgIleGlyAspLeuGluAlaArgLeuAlaGlnLeuGluHisArgValAlaVal-38

-633-

67-LysThrPheGluAlaSerAspArgAsnGluGlyValAlaArgGlnLysValArgGlnAlaCysAsnArgGluT  
hrSer-92

95-PheCysGluAspGluAlaIleArgCysArgLysPheAsp-107

a915

**AMPHI Regions - AMPHI**

9-ValAlaValSerAlaLeuSerAlaCysArgGlnAla-20

31-IleSerAspArgSerVal-36

67-SerThrIleLysGlnMetPheGlyTyrThrLysLeuProGluGluProLysGlyIleArgValIleTyrValT  
hrAspMetGlyAsnValThrAspTrpThr-100

139-GlnAlaGluLysPhe-143

**Antigenic Index - Jameson-Wolf**

15-SerAlaCysArgGlnAlaGluGluGlyProProProLeuProArgGlnIleSerAspArgSerValGlyHis-  
38

43-AsnLeuThrGluHisAsnGlyProLysAla-52

57-AsnGlyLysProAspGlnProVal-64

75-TyrThrLysLeuProGluGluProLysGlyIle-85

97-ThrAspTrpThrAsnProAsnAlaAspThrGluTrpMetAspAlaLysLys-113

125-GlyMetGlyAlaGluAspAlaLeuProPheGlyAsnLysGluGlnAlaGluLysPheAlaLysAspLysGly  
GlyLysValValGlyPheAspAspMetProAspThrTyr-161

**Hydrophilic Regions - Hopp-Woods**

18-ArgGlnAlaGluGluGlyProProProLeu-27

30-GlnIleSerAspArgSerVal-36

46-GluHisAsnGlyProLys-51

58-GlyLysProAspGln-62

77-LysLeuProGluGluProLysGlyIle-85

103-AsnAlaAspThrGluTrpMetAspAlaLysLys-113

127-GlyAlaGluAspAlaLeu-132

135-GlyAsnLysGluGlnAlaGluLysPheAlaLysAspLysGlyGlyLys-150

155-AspAspMetProAsp-159

a917

**AMPHI Regions - AMPHI**

6-ProLeuAlaValLeuThrAlaLeuLeuLeu-15

37-ValLeuLysIleTyrAsnTrpSerGluTyrValAspProGluThrValAlaAsp-54

99-IleLysAlaGlyAlaTyrGlnLysIleAspLysSerLeu-111

124-ArgLeuMetAspGlyValAspPro-131

152-ArgValLysLysAlaLeu-157

188-AspSerAlaAlaGlu-192

206-AsnSerSerAsnThrGluAspIleArgGluAlaThr-217

292-AlaLysAsnValAlaAsnAlaHisLysTyrIleAsnAspPheLeuAsp-307

325-LysProAlaArgGluLeuMetGluAsp-333

**Antigenic Index - Jameson-Wolf**

18-CysGlyGlySerAspLysProProAlaGluLysProAlaProAlaGluAsnArgAsnVal-37

44-SerGluTyrValAspProGluThrValAlaAspPheGluLysLysAsnGlyIleLysValThr-54

68-TyrAspSerAspGluThrLeuGluSerLysValLeuThrGlyLysSerGlyTyrAsp-86

102-GlyAlaTyrGlnLysIleAspLysSerLeuIleProAsnTyrLysHisLeuAsnProGluMetMetArgLeu  
MetAspGlyValAspProGlyHisGluTyr-135

149-AsnThrGluArgLysLysAlaLeuGlyThrAspLysLeuProAspAsnGln-166

171-PheAspProGluTyrThrSerLysLeuLysGlnCysGly-183

201-LeuGlyLysAsnProAsnSerSerAsnThrGluAspIleArgGluAlaThrAlaLeuLysLysAsnArg  
ProAsnIleLysArgPheThrSerSerGlyPheIle-236

238-AspLeuAlaArgGlyAspThr-244

-634-

255-AsnIleAlaLysArgArgAlaGluGluAlaGlyGlyLysGluLysIleArgValMetMetProLysGluGly  
ValGly-280  
287-ValIleProLysAspAlaLysAsnValAlaAsn-297

305-PheLeuAspProGluValSerAlaLysAsnGlyAsn-316  
320-TyrAlaProSerSerLysProAlaArgGluLeuMetGluAspGluPheLysAsnAspAsnThrIlePhePro  
ThrGluGluAspLeuLysAsn-350  
368-GlnTrpGlnAspValLysAlaGlyLys-376

**Hydrophilic Regions - Hopp-Woods**

19-GlyGlySerAspLysProProAlaGluLysProAlaProAlaGluAsnArgAsnVal-37  
47-ValAspProGluThrValAlaAspPheGluLysLysAsnGlyIle-61  
68-TyrAspSerAspGluThrLeuGluSerLysValLeuThr-80  
105-GlnLysIleAspLysSerLeu-111  
121-GluMetMetArgLeuMetAspGlyValAspProGlyHis-133  
149-AsnThrGluArgValLysLysAlaLeuGlyThrAspLysLeuProAspAsnGln-166  
174-GluTyrThrSerLysLeuLysGln-181  
204-AsnProAsnSerSerAsnThrGluAspIleArgGluAlaThrAlaLeuLeuLysLysAsnArgProAsnIle  
LysArgPheThr-231  
238-AspLeuAlaArgGlyAspThr-244  
255-AsnIleAlaLysArgArgAlaGluGluAlaGlyGlyLysGluLysIleArgValMetMetProLysGluGly  
-278  
290-LysAspAlaLysAsnValAlaAsn-297  
305-PheLeuAspProGluValSerAlaLysAsn-314  
322-ProSerSerLysProAlaArgGluLeuMetGluAspGluPheLysAsnAspAsn-339  
343-ProThrGluGluAspLeuLysAsn-350  
370-GlnAspValLysAlaGlyLys-376

**a919****AMPHI Regions - AMPHI**

13-IleAlaAlaAlaIleLeu-18  
24-LysSerIleGlnThrPheProGln-31  
37-IleAsnGlyProAspArgProValGlyIleProAsp-48  
76-AspPheAlaLysSerLeuGln-82  
98-GlnAspValCysAlaGlnAlaPheGlnThrProVal-109  
119-GluArgTyrPheThr-123  
133-LeuIlaGlyThrValThrGlyTyrTyrGlu-142  
161-GlyIleProAspAspPheIleSerValPro-170  
176-ArgSerGlyLysAlaLeuValArgIleArgGln-186  
191-SerGlyThrIleAspAsnThrGlyGlyThr-200  
308-GlnGlyIleLysAlaTyrMetGlnGlnAsnProGlnArgLeuAlaGluValLeu-325  
348-AlaIeuGlyThrProLeuMetGlyGluTyrAlaGlyAlaVal-361  
382-ArgLysAlaLeuAsnArg-387

**Antigenic Index - Jameson-Wolf**

21-CysGlnSerLysSerIleGlnThr-28  
30-ProGlnProAspThr-34  
36-ValIleAsnGlyProAspArgProValGlyIleProAspProAlaGlyThr-52  
54-ValGlyGlyGlyGly-58  
76-AspPheAlaLysSerLeuGln-82  
87-GlyCysAlaAsnLeuLysAsnArgGlnGlyTrpGln-98  
121-TyrPheThrProTrp-125  
143-ProValLeuLysGlyAspAspArgArgThrAlaGln-154  
162-IleProAspAspPheIle-167

-635-

173-AlaGlyLeuArgSerGlyLysAlaLeuValArgIleArgGlnThrGlyLysAsnSerGlyThrIleAspAsn  
 ThrGlyGlyThrHis-201  
 215-ThrAlaIleLysGlyArgPheGluGlySerArgPheLeuProTyrHisThrArgAsnGlnIleAsnGlyGly  
 AlaleuAspGlyLysAlaPro-245  
 250-AlaGluAspProValGlu-255  
 262-GlnGlySerIlyArgLeuLysThrProSerGlyLysTyrIleArg-276  
 278-GlyIlyAlaAspLysAsnGluHisPro-286  
 293-TyrMetAlaAspLysGlyTyrLeuLysLeuGlyGln-304  
 316-GlnAsnProGlnArgLeuAlaGlu-323  
 326-GlyGlnAsnProSer-330  
 337-LeuThrGlySerSerAsnAspGlyProVal-346  
 359-GlyAlaValAspArgHisTyr-365  
 379-ProValThrArgLysAlaLeuAsn-386  
 393-AspThrGlySerAlaIleLysGlyAlaValArg-403  
 409-GlyIlyArgAspGluAlaGlyGluLeuAlaGlyLysGlnLysThrThr-424  
 431-LeuProAsnGlyMetLysProGluTyrArgPro-441

**Hydrophilic Regions - Hopp-Woods**

38-AsnGlyProAspArgProValGly-45  
 90-AsnLeuLysAsnArgGlnGlyTrp-97  
 144-ValLeuLysGlyAspAspArgArgThrAlaGln-154  
 175-LeuArgSerGlyLysAlaLeuValArgIleArgGlnThrGlyLysAsnSerGlyThrIleAspAsnThrGly  
 -198  
 215-ThrAlaIleLysGlyArgPheGluGly-223  
 239-AlaLeuAspGlyLysAla-244  
 250-AlaGluAspProVal-254  
 265-GlyArgLeuLysThrProSer-271  
 279-TyrAlaAspLysAsnGluHis-285  
 317-AsnProGlnArgLeuAlaGlu-323  
 337-LeuThrGlySerSerAsnAspGlyPro-345  
 380-ValThrArgLysAlaLeuAsn-386  
 393-AspThrGlySerAlaIle-398  
 412-AspGluAlaGlyGluLeuAlaGlyLysGlnLysThr-423  
 434-GlyNetLysProGluTyrArgPro-441  
**a919**

**AMPHI Regions - AMPHI**

13-IleAlaAlaAlaIleLeu-18  
 24-LysSerIleGlnThrPheProGln-31  
 37-IleAsnGlyProAspArgProValGlyIleProAsp-48  
 76-AspPheAlaLysSerLeuGln-82  
 98-GlnAspValCysAlaGlnAlaPheGlnThrProVal-109  
 119-GluArgTyrPheThr-123  
 133-LeuAlaGlyThrValThrGlyTyrTyrGlu-142  
 161-GlyIleProAspAspPheIleSerValPro-170  
 176-ArgSerGlyLysAlaLeuValArgIleArgGln-186  
 191-SerGlyIleIleAspAsnThrGlyGlyThr-200  
 308-GlnGlyIleLysAlaTyrMetGlnGlnAsnProGlnArgLeuAlaGluValLeu-325  
 348-AlaLeuGlyThrProLeuMetGlyGluTyrAlaGlyAlaVal-361  
 382-ArgLysAlaLeuAsnArg-387

**Antigenic Index - Jameson-Wolf**

21-CysGlnSerLysSerIleGlnThr-28  
 30-ProGlnProAspThr-34  
 36-ValIleAsnGlyProAspArgProValGlyIleProAspProAlaGlyThr-52  
 54-ValGlyGlyGly-58

-636-

76-AspPheAlaLysSerLeuGln-82  
 87-GlyCysAlaAsnLeuLysAsnArgGlnGlyTrpGln-98  
 121-TyrPheThrProTrp-125  
 143-ProValLeuLysGlyAspAspArgArgThrAlaGln-154  
 162-IleProAspAspPheIle-167  
 173-AlaGlyLeuArgSerGlyLysAlaLeuValArgIleArgGlnThrGlyLysAsnSerGlyThrIleAspAsn  
 ThrGlyGlyThrHis-201  
 215-ThrAlaIleLysGlyArgPheGluGlySerArgPheLeuProTyrHisThrArgAsnGlnIleAsnGlyGly  
 AlaLeuAspGlyLysAlaPro-245  
 250-AlaGluAspProValGlu-255  
 262-GlnGlySerGlyArgLeuLysThrProSerGlyLysTyrIleArg-276  
 278-GlyIlyRalaAspLysAsnGluHisPro-286  
 293-TyrMetAlaAspLysGlyTyrLeuLysLeuGlyGln-304  
 316-GlnAsnProGlnArgLeuIlaGlu-323  
 326-GlyGlnAsnProSer-330  
 337-LeuThrGlySerSerAsnAspGlyProVal-346  
 359-GlyAlaValAspArgHisTyr-365  
 379-ProValThrArgLysAlaLeuAsn-386  
 393-AspThrGlySerAlaIleLysGlyAlaValArg-403  
 409-GlyTyrGlyAspGluAlaGlyGluLeuAlaGlyLysGlnLysThrThr-424  
 431-LeuProAsnGlyMetLysProGluTyrArgPro-441

**Hydrophilic Regions - Hopp-Woods**

38-AsnGlyProAspArgProValGly-45  
 90-AsnLeuLysAsnArgGlnGlyTrp-97  
 144-ValLeuLysGlyAspAspArgArgArgThrAlaGln-154  
 175-LeuArgSerGlyLysAlaLeuValArgIleArgGlnThrGlyLysAsnSerGlyThrIleAspAsnThrGly  
 -198  
 215-ThrAlaIleLysGlyArgPheGluGly-223  
 239-AlaLeuAspGlyLysAla-244  
 250-AlaGluAspProVal-254  
 265-GlyArgLeuLysThrProSer-271  
 279-TyrAlaAspLysAsnGluHis-285  
 317-AsnProGlnArgLeuAlaGlu-323  
 337-LeuThrGlySerSerAsnAspGlyPro-345  
 380-ValThrArgLysAlaLeuAsn-386  
 393-AspThrGlySerAlaIle-398  
 412-AspGluAlaGlyGluLeuAlaGlyLysGlnLysThr-423  
 434-GlyMetLysProGluTyrArgPro-441  
**a920-2**

**AMPHI Regions - AMPHI**

43-GlyGluPheProGluLeuGluProIleAla-52  
 118-IleLysGlnMetProAsp-123  
 135-LysAsnIleValAsnVal-140  
 163-LeuAspAsnProAlaAsn-168  
 190-ThrValThrAlaThrPheAspGlyPheAspThrSerAspArgSerLys-205  
 212-GlnAlaPheSerAspSerThr-218

**Antigenic Index - Jameson-Wolf**

40-LeuGlyTyrGlyGlu-44  
 49-GluProIleAlaLysAspArgLeu-56  
 66-ValThrGluLysGlyLysGluAsnMetIle-75  
 82-TyrGlnTyrArgSerAsnArgProValLysAspGlySerTyr-95  
 104-ThrPheTrpSerLysAsnLysAlaGlyTrp-113

-637-

120-GlnMetProAspAlaSerTyrCysGluGlnThrArgMetPheGlyLysAsnIleValAsnValGlyHisGlu  
 SerAlaAspThr-147  
 152-LysProValGlyGlnAsnLeuGlu-159  
 162-ProLeuAspAsnProAla-167  
 173-GluArgPhelysVal-177  
 181-PheArgGlyGluProLeuProAsnAla-189  
 194-ThrPheAspGlyPheAspThrSerAspArgSerLysThrHisLysThrGluAla-211  
 213-AlaPheSerAspSerThrAspAspLysGlyGluValAsp-225  
 237-AsnValGluHisLysAlaAspPheProAspGlnSerValCysGlnLysGlnAlaAsnTyrSer-257

**Hydrophilic Regions - Hopp-Woods**

49-GluProIleAlaLysAspArgLeu-56  
 66-ValThrGluLysGlyLysGluAsnMetIle-75  
 85-ArgSerAsnArgProValLysAspGlySer-94  
 107-SerLysAsnLysAlaGlyTrp-113  
 128-GluGlnThrArgMetPheGly-134  
 142-HisGluSerAlaAsp-146  
 173-GluArgPhelysVal-177  
 196-AspGlyPheAspThrSerAspArgSerLysThrHisLysThrGluAla-211  
 213-AlaPheSerAspSerThrAspAspLysGlyGluValAsp-225  
 237-AsnValGluHisLysAlaAspPheProAsp-246  
 248-SerValCysGlnLys-252

**a921****AMPHI Regions - AMPHI**

10-IleValAlaValLeuSerGlyCysGlnSerIleTyrValProThrLeuThrGluIleProValAsn-31  
 33-IleAsnThrValLysThr-38  
 51-HisTrpThrAspValAlaLysIleSerAspGlu-61  
 72-GlyLysMetThrLysValGlnAlaAlaGlnTyrLeuAsnAsnPheArgLys-88  
 98-AspSerMetTyrGluIleTyrLeuArg-106  
 126-GlnAsnAlaLeuArgGlyTrpGlnGlnArg-135

**Antigenic Index - Jameson-Wolf**

36-ValLysThrGluAlaProAlaLysGlyPheArg-46  
 56-AlaLysIleSerAspGluAlaThrArg-64  
 72-GlyLysMetThrLys-76  
 84-AsnAsnPheArgLysArgLeuValGlyArgAsnAlaValAspAspSerMet-100  
 108-AlaIleAspSerGlnArgGlyAlaIleAsnThrGluGlnSerLys-122  
 128-AlaLeuArgGlyTrpGlnGlnArgTrpLysAsnMetAspValLysProAsnAsnProAla-147

**Hydrophilic Regions - Hopp-Woods**

36-ValLysThrGluAlaProAlaLysGlyPheArg-46  
 56-AlaLysIleSerAspGluAlaThrArg-64  
 86-PheArgLysArgLeuValGly-92  
 94-AsnAlaValAspAspSerMet-100  
 108-AlaIleAspSerGlnArgGlyAlaIleAsnThrGluGlnSerLys-122  
 136-TrpLysAsnMetAspValLysProAsnAsn-145

**a922****AMPHI Regions - AMPHI**

16-LeuSerAlaCysThr-20  
 28-ArgAlaAsnGluAlaGlnAlaPro-35  
 72-ValArgArgPheValAspAsp-78  
 89-GluTrpGlnAspPhePheAspLys-96  
 104-ValLysIleMetHis-108  
 144-AspAspValAlaGln-148  
 172-GlySerPheArgValAlaAspAlaLeu-180

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196-LysGluLeuValGluLeuLeuLysLeuAla-205  
 222-AlaMetGlyMetPro-226  
 245-HisArgAspIleTrpGlyAsnValGlyAspValAlaAlaSerIleAlaAsnTyrMetLysGlnHis-266  
 298-ArgThrValAlaAspLeuLysAlaTyr-306  
 335-TyrLeuGlyLeuAsnAsnPheTyrThr-343

**Antigenic Index** - Jameson-Wolf  
 1-MetLysAsnArgLysIleLeu-7  
 22-MetGluAlaArgProProArgAlaAsnGluAlaGlnAlaProArgAlaAspGluMetLysLysGluSerArgP  
 roAlaPhe-48  
 61-ValSerAspSerGlyPhe-66  
 70-AlaAsnValArgArgPheValAspAspGluValGlyLysGlyAspPheSerArgAlaGluTrp-90  
 107-MetHisArgProSerThrSerArgPro-115  
 120-ArgThrGlyAsnSerGlyLysAlaLysPheArgGlyAlaArgArgPheTyrAlaGluAsnArgAlaLeuIle  
 -143  
 145-AspValAlaGlnLysTyrGlyVal-152  
 163-IleGluThrAsnTyrGlyLysAsnThrGlySer-173  
 186-AspTyrProArgArgAlaGlyPhePhe-194  
 203-LysLeuAlaLysGluGluGlyGlyAsp-211  
 229-MetProSerSerTyrArgLysTrpAlaValAspTyrAspGlyAspGlyHisArgAspIle-248  
 266-HisGlyTrpArgThrGlyLys-273  
 281-AlaProGlyAlaAsp-285  
 290-IleGlyGluLysThrAlaLeu-296  
 310-ProGlyGluGluLeuAlaAspAspGluLysAlaVal-321  
 326-GluThrAlaProGly-330  
 357-ValArgAspIleAlaAsnSerLeuGlyGlyProGlyLeu-369

**Hydrophilic Regions** - Hopp-Woods  
 1-MetLysAsnArgLysIleLeu-7  
 22-MetGluAlaArgProProArgAlaAsnGluAlaGlnAlaProArgAlaAspGluMetLysLysGluSerArgP  
 roAlaPhe-48  
 70-AlaAsnValArgArgPheValAspAspGluValGlyLysGlyAspPheSerArgAlaGluTrp-90  
 122-GlyAsnSerGlyLysAlaLysPheArgGlyAlaArgArgPheTyrAlaGluAsnArgAlaLeuIle-143  
 166-AsnTyrGlyLysAsnThrGly-172  
 187-TyrProArgArgAlaGlyPhePhe-194  
 203-LysLeuAlaLysGluGluGlyGlyAsp-211  
 240-TyrAspGlyAspGlyHisArgAspIle-248  
 290-IleGlyGluLysThrAlaLeu-296  
 310-ProGlyGluGluLeuAlaAspAspGluLysAlaVal-321  
 357-ValArgAspIleAla-361  
 a923-2

**AMPHI Regions** - AMPHI  
 9-LeuMetAlaCysAlaAlaPheLeu-16  
 26-LeuGlyAlaCysTyrAlaIleLeuSerLeuTyrAla-37  
 63-ProAlaLeuPheGlyGlyTrpAlaGly-71

**Antigenic Index** - Jameson-Wolf  
 43-IleAspLysArgArgAlaValArgGlyLysArgArgIleProGluHisArgLeu-60  
 77-ArgIlePheArgHisLysThrAlaLysLysArgPhe-88

**Hydrophilic Regions** - Hopp-Woods  
 43-IleAspLysArgArgAlaValArgGlyLysArgArgIleProGluHisArgLeu-60  
 77-ArgIlePheArgHisLysThrAlaLysLysArgPhe-88  
 a925-1

**AMPHI Regions - AMPHI**

66-LysCysGlyGlnThrAlaGln-72  
 90-HisGlnAlaAlaIleGluGlnLeuLys-98  
 105-PheAspGluLeuGlu-109

**Antigenic Index - Jameson-Wolf**

6-PheThrGlyLysGluGluSerMetLeuLeuSerGluLysAspGlyAla-21  
 25-AsnThrGlyIleGly-29  
 31-IleProIleLysLeuSerAspAspGlyLysGluLeuTyrValGluArgArgGlnTyrValLysThrAspAlaA  
 laMetLysAspLysIleIleAlaHisGlnLysLysCysGlyGlnThr-70  
 75-LeuAspAlaArgAsnAlaLeuProSerAsnGlnThrTyrGln-88  
 95-GluGlnLeuLysArgArgPheGluAlaGluPheAspGluLeuGluLysGluIleLysCysAsnGlyLysProT  
 hr-119

**Hydrophilic Regions - Hopp-Woods**

7-ThrGlyLysGluGluSerMetLeuLeuSerGluLysAspGlyAla-21  
 31-IleProIleLysLeuSerAspAspGlyLysGluLeuTyrValGluArgArgGlnTyrValLysThrAspAlaA  
 laMetLysAspLysIleIleAlaHisGlnLysLysCysGlyGln-69  
 75-LeuAspAlaArgAsnAlaLeu-81  
 95-GluGlnLeuLysArgArgPheGluAlaGluPheAspGluLeuGluLysGluIleLysCysAsnGlyLys-117  
 a926

**AMPHI Regions - AMPHI**

32-HisThrArgSerPhe-36  
 72-LeuGlySerThrLeuGlyGln-78  
 98-AlaGluSerAlaGluGluLeuSerArgGln-107  
 129-GlyAlaProTyrArgIleLeuProAspGlyIle-139  
 151-AlaAspSerGlyGlyGlnVal-157

**Antigenic Index - Jameson-Wolf**

19-LeuProGlnAsnAsnGluAsnLeuTrpGlnProSerGluHisThrArgSerPheThrAlaGluGlyArgLeuA  
 laValLysAlaGluGlyLysGlySerTyrAla-53  
 70-ThrProLeuGlySer-74  
 79-LeuCysGlnAspArgAspGlyAlaLeu-87  
 89-ValAspGlyLysGlyAsnValTyr-96  
 99-GluSerAlaGluGluLeuSerArg-106  
 122-AlaAspGlyArgProValAlaGlyAlaPro-131  
 134-IleLeuProAspGlyIleLeu-140  
 148-GlyArgThrAlaAspSerGlyGlyGln-156  
 177-GlyMetProSerGluThrGluThrGlnGluGlnCysAla-189

**Hydrophilic Regions - Hopp-Woods**

36-PheThrAlaGluGlyArgLeuAlaValLysAlaGluGlyLysGlySer-51  
 80-CysGlnAspArgAspGlyAlaLeu-87  
 89-ValAspGlyLysGly-93  
 99-GluSerAlaGluGluLeuSerArg-106  
 123-AspGlyArgProValAla-128  
 149-ArgThrAlaAspSerGlyGlyGln-156  
 180-SerGluThrGluThrGlnGluGlnCysAla-189  
 a927

**AMPHI Regions - AMPHI**

13-LeuLeuSerAlaCysSer-18  
 48-SerTyrAspValAlaArgAspPheTyrLysGlu-58  
 120-LysGlyTrpGlnGlnAlaLeuPro-127  
 145-AsnProLysGlnIleArgAspTrpAsnAspLeuAlaLysAspGly-159  
 197-LysLeuValAlaSerIleLeu-203

**Antigenic Index - Jameson-Wolf**

18-SerProAlaAlaAspSerAsnHisProSerGlyGlnAsnAlaProAlaAsnThrGluSerAspGlyLysAsnI  
leThr-43  
48-SerTyrAspValAlaArgAspPheTyrLysGluTyrAsnPro-61  
67-TyrGlnSerGluHisProGlyThrSer-75  
80-GlnSerHisGlyGlySerSerLysGln-88  
104-AsnGlnSerAspIleAspLeuLeuGluLysLysGlyLeuVal-118

126-LeuProAspHisAlaAlaProTyrThr-134  
142-ArgLysAsnAsnProLysGlnIleArgAspTrpAsnAspLeuAlaLysAspGlyVal-160  
166-AsnProLysThrSerGlyAsnGlyArg-174  
185-LeuLysThrThrAsnGlyAsnGluGlnGluLys-197  
203-LeuLysAsnThrProValPheGluAsnGlyGlyArgAlaProPrProSerHisAsnAlaThrSer-225  
230-SerLeuLeuLysThrLysProThrThrSerAlaLysAsn-242

**Hydrophilic Regions - Hopp-Woods**

19-ProAlaAlaAspSerAsnHisProSer-27

33-AlaAsnThrGluSerAspGlyLysAsn-41  
50-AspValAlaArgAspPheTyrLys-57  
67-TyrGlnSerGluHisProGly-73  
82-HisGlyGlySerSerLysGln-88  
105-GlnSerSerAspIleAspLeuLeuGluLysLysGlyLeuVal-118  
142-ArgLysAsnAsnProLysGlnIleArgAspTrpAsnAspLeuAlaLysAspGlyVal-160  
167-ProLysThrSerGlyAsnGly-173  
187-ThrThrAsnGlyAsnGluGlnGluAlaGlnLys-197  
211-AsnGlyGlyArgAlaProPro-217  
232-LeuLysThrLysProThrThrSerAlaLysAsn-242

**a929**

**AMPHI Regions - AMPHI**

25-ValProAspGlyValLys-30  
34-TrpThrLeuLeuAlaMetPheIleGlyValIleAlaAlaIleIle-48  
76-GlyAlaAlaMetSerAspAlaLeuSerAlaPhe-86  
155-HisProIleMetGlnSerIleAlaGlySerTyrGlySerAsnProAlaLys-171  
180-TyrLeuIleLeuVal-184  
204-ProLeuIleValAsnLeuIleAlaGluAsnLeuGly-215  
233-GlyValIleAlaPhePhe-238  
265-ArgLeuArgGluMetGlyLysMetSer-273  
280-AlaValIlePheGlyIle-285  
355-LeuGlyLeuIleLysTrpPheSerGlyValLeuAlaGluSerValGlyGlyLeu-372  
398-ThrAlaHisIleThrAlaMetPheGlyAlaPhePheAla-410  
452-TyrThrThrMetGlyGluTrpTrp-459

**Antigenic Index - Jameson-Wolf**

25-ValProAspGlyValLysProGln-32  
71-ThrAlaAspLysProGlyAlaAlaMet-79  
122-GlyArgLysThrLeuGlyIle-128  
143-ThrProSerAsnThrAlaArgGlyGly-152  
163-GlySerTyrGlySerAsnProAlaLysGlyThrGluGlyLysMetGlyLys-179  
187-HisSerAsnProIleSer-192  
213-AsnLeuGlySerSerPhe-218  
248-TyrProProGluIleLysGluThrProAsn-257  
261-PheAlaLysAspArgLeuArgGluMetSerAlaAspGluIle-277

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328-AspValLeuLysGluLysSerAlaTrp-336

**Hydrophilic Regions - Hopp-Woods**

71-ThrAlaAspLysProGlyAlaAlaMet-79

146-AsnThrAlaArgGly-150

168-AsnProAlaLysGlyThrGluGlyLysMetGlyLys-179

250-ProGluIleLysGluThrProAsn-257

261-PheAlaLysAspArgLeuArgGluMetGlyLysMetSerAlaAspGluIle-277

328-AspValLeuLysGluLysSerAlaTrp-336

**a931****AMPHI Regions - AMPHI**

43-LysAlaProLysThrValAlaAsnPheValArgTyrAlaArgLys-57

67-ArgValIleGlyGly-71

81-GluAspLeuAlaGlnLysAlaSerAspLys-90

94-AsnGluSerGlyAsnGlyLeuLysAsnThrValGly-105

107-IleAlaMetAlaArgThrAlaAspProAsp-116

120-SerGlnPhePheIle-124

142-ThrValPheGlyArgValGluSerGlyMetAsnThrValSerIleAlaArgValLysThrAlaThrArg  
GlyPhe-167**Antigenic Index - Jameson-Wolf**

1-MetLysProLysPhe-5

30-ThrAspMetGlyAsn-34

38-ValLeuAspGluSerLysAlaProLysThr-47

53-ArgTyrAlaArgLysGlyPheTyrAspAsnThrIle-64

76-GlyGlyGlyLeuThrGluAspLeuAlaGlnLysAlaSerAspLysAlaValAlaAsnGluSerGlyAsnGlyL  
euLysAsnThrVal-104

111-ArgThrAlaAspProAspSerAlaThr-119

127-ValAspAsnAspSerLeuAsnTyrLysAsnGlyGln-138

145-GlyArgValGluSerGlyMetAsnThrVal-154

156-LysIleAlaArgValLysThrAlaThrArgGlyPhe-167

176-ValLysIleArgArg-180

**Hydrophilic Regions - Hopp-Woods**

1-MetLysProLysPhe-5

30-ThrAspMetGlyAsn-34

38-ValLeuAspGluSerLysAlaProLysThr-47

78-GlyLeuThrGluAspLeuAlaGlnLysAlaSerAspLysAlaValAlaAsnGluSerGlyAsnGlyLeu-100

111-ArgThrAlaAspProAspSerAlaThr-119

127-ValAspAsnAspSerLeuAsn-133

145-GlyArgValGluSerGlyMet-151

156-LysIleAlaArgValLysThrAlaThr-164

176-ValLysIleArgArg-180

**a933****AMPHI Regions - AMPHI**

27-AsnIleProAlaLeuPheProLysHisProPheAspProPheGluAsnIleAsnAsnSerLysArg-48

63-GlyPheAlaGlnGlyLeu-68

78-GluLysProIleArgGlnTyrPheLysGluCysLeuAsnThrGly-92

95-SerAspAspThrCys-99

131-ValGlyAsnTyrIleGluTrpLeu-138

155-AspValAspProPheHisTyrIleGluVal-164

257-GluAsnProIleAspAspLeuLysSerLeuAspGlyHisGlnIleIleLysValAsn-275

304-GlyPhePheThrLys-308

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351-TrpLeuArgValIleAspGlyHisSerAsn-360  
 426-AlaGlyIleTyrAlaThrTrpHis-433  
 447-TrpValGlnTyrGln-451  
 462-AlaThrGluArgPheThr-467  
 469-LysCysIleThrAlaSer-474  
 478-GlyTyrAsnIleLeuLeuAla-484  
 543-LeuTyrLysAsnIleAlaIleGlu-550  
 552-PheAlaAlaValAsn-556  
 601-PheAsnArgGlnThrGly-606

**Antigenic Index - Jameson-Wolf**

1-LysLeuArgAspArgAsnSerGluTyrTrpLysGluGluThrTyrHisIleLysSerAsnAsnArgValTy  
 rPro-26  
 33-ProLysHisProPheAspProPheGluAsnIleAsnAsnSerLysArgIleSerPheTyrAspLysGluTyrT  
 hrGluAspTyr-60  
 69-GlyValAlaLysArgAsnGlyGluThrGluLysProIleArg-82  
 88-CysLeuAsnThrGlyLysTyrSerAspAspThrCysLysSerGlnGlnSer-104  
 108-ValArgSerAspIle-112  
 117-ThrLysIleLysAsnSerHisIleAsnSerGluIle-128  
 145-LeuSerSerSerGlnGluHisLeuTyrSerAspValAspProPheHis-160  
 163-GluValThrAspAsnSerHis-169  
 178-AspGluPheArgLeuGluAsnSerLeuTrpGluProArgTrpAspSerAspValGlyGluLeuLysThrThr  
 AsnAlaAspIleArgPheAsnThrLysSerGluSerLeuLeuValLysGluAspTyrAlaGlyGlyAlaArgPhe-  
 226  
 231-GlyLeuLysAspLysValProGluThrPro-240  
 244-PheGluLysAsnIleThrGlyThrSer-252  
 255-IlePheGluAsnProIleAspAspLeuLysSerLeuAspGlyHisGlnIleIle-272  
 274-ValAsnGlyThrAlaAspLysHisAlaPheArgLeuSerGlyLysHisGlnLysGly-292  
 298-LeuGlnGlnArgProGluGlyPhe-305  
 308-LysValGlnGluArgAspAspIleSer-316  
 332-ArgLeuAsnAspLysAsnSerAspIlePheAspArgThrLeuProArgLysGlyLeu-350  
 355-IleAspGlyHisSerAsnGlnTrpValGlnGlyLysThrAlaProValGluSerAsnArgLysGlyVal-37  
 7  
 387-GlnAsnGluSerAsnGlnLeu-393  
 399-SerGlyGlnAlaGluGlnArgSerThrPheArgAsnProAspThrAspAsnLeuThrThrGlyAsnValLys  
 GlyPheGly-425  
 435-LeuGlnAspLysGlnThrGlyAlaTyrAlaAspSer-446  
 451-GlnArgPheArgHisArgIleAsnThrGluAspAlaThrGluArgPheThrSerLysGlyIle-471  
 486-HisPheThrLysLysGlyAsnArgVal-494  
 509-ValAsnGlyLysPheSerAspSerGluAsnAla-519  
 524-LeuGlySerArgGlnLeuGlnSer-531  
 562-LysProPheGlyValGluMetAspGlyGluArgArgMetIleAsnAsnLysThrAlaIleGluSer-583  
 589-ValLysIleLysSer-593  
 600-ThrPheAsnArgGlnThrGlyLysHisHisGlnAlaLysGlnGly-614

**Hydrophilic Regions - Hopp-Woods**

1-LysLysLeuArgAspArgAsnSerGluTyrTrpLysGluGluThrTyrHis-17  
 35-HisProPheAspPro-39  
 44-AsnAsnSerLysArgIleSerPheTyrAspLysGluTyrThrGlu-58  
 70-ValAlaLysArgAsnGlyGluThrGluLysProIle-81  
 93-LysTyrSerAspAspThrCysLysSerGlnGln-103  
 117-ThrLysIleLysAsn-121  
 152-LeuTyrSerAspValAsp-157  
 178-AspGluPheArgLeuGlu-183

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189-ProArgTrpAspSerAspValGlyGluLeuLysThrThrAsnAlaAspIleArgPheAsnThrLysSerGlu  
 SerLeuLeuValLysGluAspTyrAlaGly-222  
 232-LeuLysAspLysValProGlu-238  
 246-LysAsnIleThrGly-250  
 258-AsnProIleAspAspIleLeuLysSerLeuAsp-267  
 276-GlyIleThrAlaAspLysHisAlaPhe-283  
 285-LeuSerGlyLysHisGlnLys-291  
 299-GlnGlnArgProGluGlyPhe-305  
 309-ValGlnGluArgAspAspIle-315  
 333-LeuAsnAspLysAsnSerAspIlePheAsp-342  
 366-LysIleAlaProValGluSerAsnArgLysGlyVal-377  
 388-AsnGluSerAsnGln-392  
 401-GlnAlaGluGlnArgSerThrPheArgAsnProAspThrAspAsnLeuThr-417  
 435-LeuGlnAspLysGlnThr-440  
 451-GlnArgPheArgHisArgIleAsnThrGluAspAlaThrGluArgPheThrSer-468  
 486-HisPheThrLysLysGlyAsnArg-493  
 512-LysPheSerAspSerGluAsnAla-519  
 527-ArgGlnLeuGlnSer-531  
 564-PheGlyValGluMetAspGlyGluArgArgMetIleAsn-576  
 589-VallLysIleLysSer-593  
 603-ArgGlnThrGlyLysHisHisGlnAlaLysGlnGly-614  
**a935**  
**AMPHI Regions - AMPHI**  
 41-ValSerAspLysTrpAla-46  
 56-AlaProArgValVal-60  
 72-LeuGluHisSerLeuArgAsp-78  
 87-LeuIleAlaSerLeuAlaAspLeuTyrAlaLysLeu-98  
 111-AlaLeuLeuAlaLysLeuAlaGlyArgProAlaGluAlaValAlaArgTyrArgGlu-129  
 172-ProValLeuGluAsnValGlyArgPheArgLysLysAlaGlu-185  
 375-LysArgLeuGlyGluSerAlaThrValPheGlyGlyTrpGlnPheVal-390  
 415-AlaGlyTrpAlaGlnGluTrpArgGlnLeuGlyGlyLeu-427  
 435-TyrAlaArgArgAsnTyr-440

**Antigenic Index - Jameson-Wolf**  
 27-AlaIleLeuAspAspLysAlaLeu-34  
 39-ArgSerValSerAspLysTrpAlaGluSerAspTrpLysValAspAsnAspAlaProArgValValAspGlyA  
 spPhe-64  
 70-LysMetLeuGluHisSerLeuArgAspValLeuAsnGlyAsnGlnAlaAsp-86  
 97-LysLeuProAspTyrAspAla-103  
 108-ArgAlaArgAlaLeu-112  
 116-LeuAlaGlyArgProAlaGluAlaValAlaArgTyrArgGluLeuHisGlyGluAsnAlaAlaAspGluArg  
 IleLeu-141  
 145-AlaAlaAlaGluPheAspAspPheAspLeuLysSerAlaGluArgHisPheAlaGluAlaGluLysLeuAsp  
 Leu-169  
 176-AsnValGlyArgPheArgLysLysAlaGluGlyLeuThrGly-189  
 192-DheSerGlyGlyIle-196  
 199-AlaValAsnArgAsnAlaAsnAsnAlaAla-208  
 210-GlnTyrCysArgGlnAsnGlyGlyArgGln-219  
 224-SerArgAlaGluArgAlaAla-230  
 236-IleGluAlaGluLysLeuThrAla-243  
 253-ArgSerAsnIleGlyGlyThrSerTyr-261  
 263-PheSerLysLysSerAlaTyrAspAspGlyPheGlyArg-275  
 279-GlyTrpGlnTyrLysAsnAlaArgGlnThr-288  
 300-SerGlySerAspGlyPheAspAlaLysThrLysArgValAsnAsnArgArgLeuProProTyr-320  
 332-HisThrTyrArgProAsnProGlyTrp-340

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347-GluHisTyrArgGlnArgTyrArgGluGlnAspArgAlaGluAsnAsnGlyArgGlnAspGlyPheTyr  
 -370  
 373-SerAlaLysArgLeuGlyGlu-379  
 392-PheValProLysArgGluThrVal-399  
 406-AlaAlaTyrArgArgAsnGlyValTyrAlaGly-416  
 425-GlyGlyLeuAsnSerArgValSerAlaSerTyrAlaArgArgAsnTyrLysGly-442  
 448-ThrGluAlaGlnArgAsnArgGluTrpAsn-457  
 463-SerHisAspLysLeuSerTyrLysGly-471  
 480-PheGlyArgThrGluSerAsnValProTyrAlaLysArgArgAsnSerGlu-496  
 501-AlaAspTrpArgPhe-505

**Hydrophilic Regions - Hopp-Woods**

27-AlaIleLeuAspAspLysAlaLeu-34  
 39-ArgSerValSerAspLysTrpAlaGluSerAspTrpLysValAspAsnAspAlaProArgValValAsp-61  
 70-LysMetLeuGluHisSerLeuArgAspValLeuAsn-81  
 108-ArgAlaArgAlaLeu-112  
 116-LeuAlaGlyArgProAlaGluAlaValAlaArgTyrArgGluLeuHisGly-132  
 134-AsnAlaAlaAspGluArgIleLeu-141  
 145-AlaAlaAlaGluPheAspAspPheArgLeuLysSerAlaGluArgHisPheAlaGluAlaGluLysLeuAsp  
 Leu-169  
 176-AsnValGlyArgPheArgLysLysAlaGluGly-186  
 200-ValAsnArgAsnAlaAsn-205  
 212-CysArgGlnAsnGlyGlyArgGln-219  
 224-SerArgAlaGluArgAlaAla-230  
 236-IleGluAlaGluLysLeuThrAla-243  
 265-LysLysSerAlaTyrAspAspGlyPheGly-274  
 283-LysAsnAlaArgGlnThr-288  
 303-AspGlyPheAspAlaLysThrLysArgValAsnAsnArgArgLeuPro-318  
 348-HisTyrArgGlnArgTyrArgGluGlnAspArgAlaGluTyrAsnAsnGlyArgGlnAsp-367  
 373-SerAlaLysArgLeuGlyGlu-379  
 393-ValProLysArgGluThrVal-399  
 407-AlaTyrArgArgAsnGly-412  
 435-TyrAlaArgArgAsnTyrLys-441  
 449-GluAlaGlnArgAsnArgGluTrp-456  
 463-SerHisAspLysLeuSerTyr-469  
 480-PheGlyArgThrGluSer-485  
 489-TyrAlaLysArgArgAsnSerGlu-496  
**a936-1**

**AMPHI Regions - AMPHI**

8-ValArgThrLeuThrAla-13  
 22-GlyCysValSerAlaVal-27  
 100-GlnPheValGlyGlnIle-105  
 112-AlaGluGlyValTyrAsnTyrIleThrValAlaSerLeuProArgThrAlaGlyAspIleAlaGlyAsp-13  
**4**

**Antigenic Index - Jameson-Wolf**

1-MetLysProLysProHisThrValArg-9  
 33-ValGlyAlaLysSerAlaValAspArgArgThrThrGlyAlaGlnThrAspAspAsnValMet-53  
 56-ArgIleGluThrThrAlaArgSerTyrLeuArgGlnAsnAsnGlnThrLysGlyTyr-74  
 94-AlaThrGluGlyLysGlnPhe-101  
 106-AlaArgSerGluGlnAlaAla-112  
 124-LeuProArgThrAlaGlyAspIleAlaGlyAspThrTrpAsnThrSerLysValArgAla-143  
 149-SerProAlaThrGlnAlaArgValLys-157  
 172-ThrProGluGluGlnAlaGlnIleThr-180

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**Hydrophilic Regions - Hopp-Woods**

1-MetLysProLysProHisThr-7  
 37-SerAlaValAspArgArgThrThrGlyAlaGlnThrAspAspAsnValMet-53  
 56-ArgIleGluThrThrAla-61  
 68-AsnAsnGlnThrLysGlyTyr-74  
 94-AlaThrGluGlyGluLysGlnPhe-101  
 106-AlaArgSerGluGlnAlaAla-112  
 125-ProArgThrAlaGly-129  
 152-ThrGlnAlaArgValLys-157  
 172-ThrProGluGluGlnAlaGlnIle-179  
**a937**  
**AMPHI Regions - AMPHI**  
 6-LeuProAlaLeuProAlaIleLeuProLeuSerAla-17  
 232-LysGlnProAspArgLeuAsp-238

**Antigenic Index - Jameson-Wolf**

27-AspIleMetThrAspLysGlyLysTrpLysLeuGluThr-39  
 44-LeuAsnSerGluAsnAsnArgAlaGluLeu-53  
 71-ThrGluIleGlnGluAsnGlySerAsnThr-80  
 95-GlyAsnThrAspIleTyrGlySerGlySer-104  
 108-HisGluGluArgLysLeuAspGlyAsnGlyLysThrArgAsnLysArgMetSerAsp-126  
 135-PheLeuIlysAspAspLysAsnProAla-143  
 151-ThrValTyrGluIlysSerArgAsnLysAlaSerSerGlyLysSer-165  
 187-TyrArgIleAsnGlySerLysThrLeuSerSerAsnThrLysTyrLysAlaGly-204  
 217-AlaAsnAspArgIleSerLeuThrGlyGly-226  
 231-GlyLysGlnProAspArgLeuAspGlyLysLysGluSerAlaArgAsnThrSerThr-249  
 273-ValSerGlyGlnSerSerGluLeuLysPhe-283

**Hydrophilic Regions - Hopp-Woods**

27-AspIleMetThrAspLysGlyLysTrpLysLeu-37  
 47-GluAsnAsnArgAlaGluLeu-53  
 72-GluIleGlnGluAsnGlySerAsn-79  
 108-HisGluGluArgLysLeuAspGlyAsnGlyLysThrArgAsnLysArgMetSerAsp-126  
 135-PheLeuIlysAspAspLysAsnPro-142  
 151-ThrValTyrGluIlysSerArgAsnLysAlaSerSer-162  
 193-LysThrLeuSerSer-197  
 199-ThrLysTyrLysAla-203  
 217-AlaAsnAspArgIleSer-222  
 232-LysGlnProAspArgLeuAspGlyLysLysGluSerAlaArgAsn-246  
 277-SerSerSerGluLeuLysPhe-283  
**a939**

**AMPHI Regions - AMPHI**

32-AlaThrValCysAla-36  
 90-AspGlnAspIleLeu-94  
 121-LysIleTyrArgGly-125  
 135-CysMetSerCysHisGly-140  
 151-SerGluIleGlnAlaTyrProArgLeuGlyGly-161  
 169-GluGlnMetAsnAlaTyrLys-175  
 185-GluAspIleAlaAsnArgMetSer-192

**Antigenic Index - Jameson-Wolf**

18-AlaSerProLysAlaAspValGluLysGlyLysGlnVal-30  
 40-AlaAlaAspGlyAsnSerGlyIle-47  
 66-IleGlyIleArgAspGlyLysArgThrHisGlySerAlaAlaVal-80  
 88-LeuSerAspGlnAspIle-93

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102-LysGlnGlnProLysSerGlyGluAlaAsnProLysGluAsnProGluLeuGly-119  
 122-IleTyrArgGlyGlyLeuSerAspLysLysValPro-133  
 139-HisGlyProSerGlyAlaGlyMetProGlyGlyGlySerGluIleGlnAla-155  
 157-ProArgLeuGlyGlyGlnHisGln-164  
 172-AsnAlaTyrLysSerGlyGlnArgLysAsnThrIleMetGluAspIleAlaAsnArgMetSerGluGluAsp  
 LeuLysAla-198

**Hydrophilic Regions - Hopp-Woods**

18-AlaSerProLysAlaAspValGluLysGlyLysGlnVal-30  
 40-AlaAlaAspGlyAsnSer-45  
 67-GlyIleArgAspGlyLysArgThrHisGly-76  
 89-SerAspGlnAspIle-93  
 103-GlnGlnProLysSerGlyGluAlaAsnProLysGluAsnProGluLeuGly-119  
 126-GlyLeuSerAspLysLysValPro-133  
 175-LysSerGlyGlnArgLysAsnThrIleMetGluAspIleAlaAsnArgMetSerGluGluAspLeuLysAla  
 -198  
 a950  
**AMPHI Regions - AMPHI**  
 33-GlyValHisLysSerAlaHisGly-40  
 71-AlaThrValLysLysThrHisLysHisThrLysAla-82

**Antigenic Index - Jameson-Wolf**

1-MetAsnLysAsnIle-5  
 23-AlaAlaAsnLysProAlaSerAsnAlaThrGlyValHisLysSerAlaHisGlySerCysGlyAlaSerLysS  
 erAlaGluGlySerCysGlyAlaAlaGlySerLysAlaGlyGluGlyLysCysGlyGluGlyLysCysGlyAlaTh  
 rValLysLysThrHisLysHisThrLysAlaSerLysAlaLysAlaLysSerAlaGluGlyLysCysGlyGluGly  
 LysCysGlySerLys-102

**Hydrophilic Regions - Hopp-Woods**

23-AlaAlaAsnLysProAlaSer-29  
 33-GlyValHisLysSerAlaHis-39  
 43-GlyAlaSerLysSerAlaGluGlySerCys-52  
 55-AlaGlySerLysAlaGlyGluGlyLysCysGlyGluGlyLysCys-69  
 71-AlaThrValLysLysThrHisLysHisThrLysAlaSerLysAlaLysAlaLysSerAlaGluGlyLysCysG  
 lyGluGlyLysCysGlySerLys-102  
 a951  
**AMPHI Regions - AMPHI**  
 7-ThrIleLeuSerValLeuAlaAla-14  
 28-AspAlaLysProProLysGluValGlyLysValPheArgLysGlnGlnArgTyr-45  
 60-ValGluGluArgValAsn-65

125-TrpArgGlnIleGluProIleProGlyLys-134  
 153-HisLeuAspGlyLeuGluGluValLeuAla-162  
 187-AlaGlnLysAlaSerLysAlaValArgArg-196  
 202-GluAlaIleLeuProGluAlaAla-208  
 226-GlyAlaLeuGlnArgLeuAlaLysLeu-234  
 252-LysTyrProGluIleLeuAspGlyPhePheGlu-262

276-MetGluIleMetAsnLeuValSerLeuHisArgLeuAspAspAla-290  
 323-ValIleAspGlyTyrAlaGluLys-330

360-ValArgGlnTrpLeuLys-365  
 393-AlaLeuArgGlnIleGlyArgValArgLysLeuProGluGlnGln-407

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414-AspAsnLeuSerLysIle-419

421-MetPheAlaLeuSer-425  
 432-GluAlaLeuArgGlyLeuAspLysIleIleGluLys-443  
 475-SerAspLeuGluArgAlaPheArg-482  
 493-AsnLeuGlyTyrSer-497  
 501-AspSerLysArgLeu-505  
 561-HisLeuGlyGluVal-565  
 577-AspValTrpThrGlnAla-582  
 592-TrpArgGluThrLeu-596

**Antigenic Index - Jameson-Wolf**

26-AlaAlaAspAlaLysProProLysGluValGlyLysValPheArgLysGlnGlnArgTyrSerGluGluIleLysAsnGluArgAlaArgLeu-57

59-AlaValGlyGluArgValAsn-65  
 75-ThrAlaLeuGlnLysGlyGlnAla-82  
 94-GluArgThrLysSerProGluValAlaGluArgAlaLeuGlu-107  
 124-LysTrpArgGlnIleProGlyLysAlaGlnLysArgAlaGlyTrpLeuArgAsnValLeuArgGluArgGlyAsnGlnHisLeuAspGlyLeuGluGluValLeuAlaGlnAlaAspGluGlyGlnAsnArgArg-171  
 181-ValGlnGlnAspGlyLeuAlaGlnLysAlaSerLysAlaValArgArgAlaAlaLeuArg-200  
 217-GlnGlyArgGluLysGluLysAlaIle-225  
 230-ArgLeuAlaLysLeuAspThrGluIleLeuPro-240  
 248-LeuThrAlaLysTyrProGluIleLeuAspGlyPhePheGluGlnThrAspThrGlnAsn-268  
 285-HisArgLeuAspAspAlaTyrAla-292  
 298-LeuGluArgAsnProAsnAlaAsp-305  
 315-AlaAsnArgLysGluGlyAlaSer-322  
 326-GlyTyrAlaGluLysAlaTyrGlyArgGlyThrGlyGluGlnArgGlyArgAla-343  
 352-AlaAspArgArgAspTyrThrLysValArgGlnTrpLeuLysLysValSerAlaPro-370  
 373-LeuPheAspLysGlyVal-378  
 385-ValGluLeuAspGlyGlyArgAlaAlaLeu-394

396-GlnIleGlyArgValArgLysLeuProGluGlnGlyArgTyrPheThr-412  
 426-LysLeuPrcAspLysArgGluAlaLeuArgGlyLeuAspLysIleIleGluLysProProAlaGlySerAsnThrGluLeuGlnAla-454  
 466-ArgLeuGlyLysArgLysLysMetIleSerAspLeuGluArgAlaPheArgLeuAlaProAspAsn-487  
 499-LeuSerAspSerLysArgLeuAspGluGlyPhe-509  
 518-IleAsnProAspAspThrAlaValAsnAspSerIle-529  
 535-LeuLysGlyAspAlaGluSerAla-542  
 547-ArgTyrSerPheGluAsnAspProGluProGluVal-558  
 570-GlyGluArgAspGlnAla-575  
 584-HisLeuThrGlyAspLysIleTrpArgGluThrLeuLysArgHisGlyIleAlaLeuProGlnProSerArgLysProArgLys-612

**Hydrophilic Regions - Hopp-Woods**

26-AlaAlaAspAlaLysProProLysGluValGlyLysValPheArgLysGlnGlnArgTyrSerGluGluIleLysAsnGluArgAlaArgLeu-57

59-AlaValGlyGluArgValAsn-65  
 75-ThrAlaLeuGlnLysGlyGlnAla-82  
 94-GluArgThrLysSerProGluValAlaGluArgAlaLeuGlu-107  
 131-IleProGlyLysAlaGlnLysArgAlaGlyTrp-141  
 145-ValLeuArgGluArgGlyAsnGlnHis-153

155-AspGlyLeuGluGluValLeuAlaGlnAlaAspGluGlyGlnAsnArgArg-171

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185-GlyLeuAlaGlnLysAlaSerLysAlaValArgArgAlaAlaLeuArg-200  
 217-GlnGlyArgGluLysGluLysAlaIle-225  
 230-ArgLeuAlaLysLeuAspThrGluIle-238  
 248-LeuThrAlaArgLysTyrProGluIle-256  
 261-PheGluGlnThrAspThrGlnAsn-268  
 285-HisArgLeuAspAspAlaTyrAla-292  
 298-LeuGluArgAsnProAsn-303  
 315-AlaAsnArgLysGluGlyAlaSer-322  
 327-TyrAlaGluLysAlaTyrGly-333

335-GlyThrGlyGluGlnArgGlyArgAla-343  
 352-AlaAspArgArgAspTyrThrLys-359  
 385-ValGluLeuAspGlyGlyArgAlaAlaLeu-394

396-GlnIleGlyArgValArgLysLeuProGluGlnGlnGly-408  
 426-LysLeuProAspLysArgGluAlaLeuArgGlyLeuAspLysIleIleGluLysProProAla-445

448-SerAsnThrGluLeuGlnAla-454  
 466-ArgLeuGlyLysArgLysLysMetIleSerAspLeuGluArgAlaPheArgLeuAlaProAspAsn-487  
 500-SerAspSerLysArgLeuAspGlu-507  
 519-AsnProAspAspThrAlaVal-525  
 537-GlyAspAlaGluSer-541  
 550-PheGluAsnAspProGluProGluVal-558  
 570-GlyGluArgAspGlnAla-575  
 586-ThrGlyAspLysIleTrpArgGluThrLeuLysArgHisGly-600  
 605-GlnProSerArgLysProArgLys-612  
**a952**

**AMPHI Regions - AMPHI**  
 63-SerValAlaThrLeuLeuAsnAsnPheTyrGlyGln-74  
 81-ValLeuLysLysLeuAsp-86  
 94-PheGluAspMetArgArgIle-100  
 116-GluGlnLeuAlaGlnLeu-121  
 138-SerValLeuArgGlyIleAsp-144

**Antigenic Index - Jameson-Wolf**  
 40-GlnSerTrpLysGluArgArgAspPheAsnIleValLysGlnAspLeuAspPheSerCys-59  
 70-AsnPheTyrGlyGlnThrLeuThrGluGluValLeuLysLysLeuAspLysGluGlnMetArgAlaSerP  
 heGluAspMetArgArgIleMetPro-102  
 104-LeuGlyPheGluAlaLysGlyTyr-111  
 129-LeuLysTyrArgLysAspAspHisPheSer-138  
 141-ArgGlyIleAspGlyAsnThr-147  
 169-TrpGlnThrArgGluGlyAsnLeuAla-177  
 184-ValProLysLysAlaGluThrIleSer-192  
 199-HisHisProLysArgGlnThrGlu-206  
 213-ArgGlnAlaArgAlaGlu-218

**Hydrophilic Regions - Hopp-Woods**  
 41-SerTrpLysGluArgArgAspPheAsnIleValLysGlnAspLeuAspPhe-57  
 76-LeuThrGluGluGluValLeuLysLysLeuAspLysGluGlnMetArgAlaSerPheGluAspMetArgArgI  
 leMetPro-102  
 104-LeuGlyPheGluAlaLysGly-110  
 130-LysTyrArgLysAspAspHisPheSer-138  
 169-TrpGlnThrArgGluGlyAsnLeu-176  
 184-ValProLysLysAlaGluThrIleSer-192  
 200-HisProLysArgGlnThrGlu-206

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213-ArgGlnAlaArgAlaGlu-218

**a953****AMPHI Regions - AMPHI**

39-AsnThrSerThrAsnValGlyGlyPheTyrGlyLeuThr-51

75-GlnSerGlySerGlnHisPheThrAspHisLeuLysSerAlaAspIlePheAspAlaAlaGln-95

151-GlyAspPheSerThrThr-156

**Antigenic Index - Jameson-Wolf**

22-TyrLysValAspGluTyrHisAla-29

38-PheAsnThrSerThrAsnVal-44

54-ValGluPheAspGlnAlaLysArgAspGlyLysIleAspIle-67

83-AspHisLeuLysSer-87

95-GlnTyrProAspIleArgPheValSer-103

105-LysPheAsnPheAsnGlyLysLysLeuValSer-115

122-MetHisGlyLysThrAlaProValLysLeuLysAlaGluLys-135

137-AsnCysTyrGlnSerProMetLeuLys-145

147-GluValCysGlyGlyAsp-152

154-SerThrThrIleAspArgThrLysTrpGly-163

174-LysSerValArgIle-178

180-IleGlnIleGluAlaAlaLysGln-187

**Hydrophilic Regions - Hopp-Woods**

22-TyrLysValAspGluTyrHisAla-29

54-ValGluPheAspGlnAlaLysArgAspGlyLysIleAspIle-67

83-AspHisLeuLysSer-87

108-PheAsnGlyLysLysLeuValSer-115

125-LysThrAlaProValLysLeuLysAlaGluLys-135

155-ThrThrIleAspArgThrLysTrp-162

174-LysSerValArgIle-178

180-IleGlnIleGluAlaAlaLysGln-187

**a957****AMPHI Regions - AMPHI**

11-SerPhePheAlaLeuValPheAla-18

45-AlaPheValAlaLysLeuAlaArgLeuPheArgAsnAla-57

71-GluGluSerLeuAlaGlyAlaValAspAsp-80

195-GluAspValTyrGluHisCysLeuGlyCysTyrGlnMet-207

215-TyrArgAspValAlaAsnAspGlu-222

232-SerAsnArgIleAlaSer-237

246-GlnAsnMetArgGluLeuMetPrcArg-254

352-GluLysGluValSerArgTyrAlaGluAlaAlaAlaArg-364

**Antigenic Index - Jameson-Wolf**

29-IleAsnProArgTrp-33

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35-LeuSerAspThrAlaThrGluAsnProAsn-44  
 54-PheArgAsnAlaAspArgAla-60  
 64-ValLysGluSerMetArgThrGluGluSerLeu-74  
 77-AlaValAspAspGlyProLeuGlnSerGluLysAspTyr-89  
 95-ArgLeuSerArgLeuLysGluLysAlaLys-104  
 109-ThrGluGlnGluHisGlyGlu-115  
 122-TyrIleGlyGluGlyGly-127  
 133-LeuSerGlnArgSerProGluAlaPheVal-142  
 146-TyrLeuTyrArgAsnAspArgProPheSer-155  
 163-ValHisGlyGluAsnTyrGluThrThrGlyGluTyrArgVal-176  
 179-GlnProAspGlySerValPheAspAlaSerGlyArgGlyLysIleGlyGluAspValTyr-198  
 214-LysTyrArgAspValalaAsnAspGluGlnLysValTrpAspPheArgGluGluSerAsnArgIleAlaSer  
 AspSerArgAspSerValPhe-244  
 247-AsnMetArgGluLeuMetProArgGlyMetLysAlaAsnSer-260  
 265-TyrAspAlaAspGlyLeuProGln-272  
 277-SerPheAspGlyLysLysArgGlnSerPheGluTyrTyrLeuLysAsnGlyAsn-295  
 306-LeuLysAlaAspGlyValThr-312  
 326-LeuAspGlyGlyArgIleValArgGluGluLysGlnGlyAspArgLeuProAspPhe-344  
 346-LeuAsnLeuGluAspLeuGluLysGluValSerArgTyrAlaGluAlaAlaArgArgSerGlyGlyArg  
 ArgAspLeuSerHis-374

#### **Hydrophilic Regions - Hopp-Woods**

38-ThrAlaThrGluAsnPro-43  
 54-PheArgAsnAlaAspArgAla-60  
 64-ValLysGluSerMetArgThrGluGluSerLeu-74  
 77-AlaValAspAspGlyProLeuGlnSerGluLysAspTyr-89  
 95-ArgLeuSerArgLeuLysGluLysAlaLys-104  
 109-ThrGluGlnGluHisGlyGlu-115  
 133-LeuSerGlnArgSerProGlu-139  
 148-TyrArgAsnAspArgProPhe-154  
 166-GluAsnTyrGluThrThrGlyGluTyr-174  
 187-AlaSerGlyArgGlyLysIleGlyGluAspValTyr-198  
 214-LysTyrArgAspValalaAsnAspGluGlnLysValTrpAspPheArgGluGluSerAsnArgIleAlaSer  
 AspSerArgAspSerVal-243  
 247-AsnMetArgGluLeuMetProArgGlyMetLys-257  
 265-TyrAspAlaAspGlyLeuPro-271  
 279-AspAsnGlyLysLysArgGlnSer-286  
 306-LeuLysAlaAspGlyValThr-312  
 328-GlyGlyArgIleValArgGluGluLysGlnGlyAspArgLeuPro-342  
 346-LeuAsnLeuGluAspLeuGluLysGluValSerArgTyrAlaGluAlaAlaArgArgSerGlyGlyArg  
 ArgAspLeuSerHis-374  
 a958

#### **AMPHI Regions - AMPHI**

39-GlyGlySerValArgSerValSerGluProIleGln-50  
 86-ProGluAspTyrThrArgIleValAlaAsp-95  
 127-TyrAspGlnSerGlyAsp-132  
 177-ArgArgLeuGlnSerValSerArgThrAlaGluMet-188  
 343-IleSerAspThrLeuGln-348  
 483-TyrTyrSerLeuAsnArgPhe-489  
 491-SerGlnGluAlaArgArgVal-497  
 500-ThrLeuProIleVal-504

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541-GlnAsnAspLeuProAsnPheAsp-548  
 572-AsnThrAlaAsnSerLeuSerAlaAlaValGlnSer-583  
 693-AspLysLeuSerGln-697  
 723-LysLysProIleGlu-727  
 769-AspLeuSerSerValGlyArgAsnPro-777

**Antigenic Index - Jameson-Wolf**

18-PheGlyThrHisCys-22  
 28-ValAlaAlaGluGluThrAspAsnProThrAlaGlyGlySerValArgSerValSerGluProIleGln-50  
 55-SerLeuGlySerThr-59  
 63-CysSerAsnGluSerGlySerProGluArgThrGluAlaAlaValGlnGlySerGlyGluAlaSerIleProGluAspTyrThrArgIleValalaAspArgMetGluGlyGlnSerGlnValGlnValArgAlaGluGly-109  
 111-ValValValGluArgAsnArgThrThrLeuAsn-121  
 123-AspTrpAlaAspTyrAspGlnSerGlyAspArgThrValThrAlaGlyAspArgPheAlaLeuGlnGlnAspGlyThrLeuIleArgGlyGluLeu-154  
 158-LeuGluGlnGlnThrGlyGluAlaHisAsnValArgMetGluThrGluHisGlyGlyArgArgLeuGlnSerValSerArgThrAlaGluMetLeuGlyGluGlyHisTyrLysLeuThrGluThrGlnPheAsnThrCysSerAlaGlyAspAlaGlyTrp-211  
 216-AlaSerValGluAlaAspArgGluLysGlyIleGly-227  
 249-PheProLeuAspGlyAsnArgLysSerGlyLeu-259  
 265-SerAlaGlySerGlyVal-271  
 292-GlyValIleGlyGluArgGlyAlaValPheAspGlyGlnValArgTyrLeuArgProAspTyrAlaGlyGlnSerAsp-317  
 321-LeuProHisAspLysSerGlyArgAsnAsnArgTyrGlnAla-335  
 337-TrpGlnHisArgIleAspIleSerAspThrLeu-347  
 352-AspPheAsnGlnValSerAspSerGlyTyrTyrArgAspPheTyrGlyAsnLysGluIleAlaGlyAsnValAsnLeuAsnArgArgValTrp-382  
 384-AspTyrGlyGlyArgAlaAlaGlyGlySerLeu-394  
 407-AlaAsnGlnSerGlyTyrLysAspLysProTyr-417  
 422-ArgLeuSerAlaAspTrpArgLysAsnThrGlyArgAla-434  
 444-ArgPheSerHisAspSerArgGlnAspGlySerArg-455  
 460-ProAspIleLysTrpAspPheSerAsnSerTrpGly-471  
 487-AsnArgPheGlySerGlnGluAlaArgArgValSerArg-499  
 507-AspSerGlyMetThrPheGluArgAsnThrArgMetPheGlyGly-522  
 525-GlnThrLeuGluProArg-530  
 538-AlaLysSerGlnAsnAspLeuProAsnPheAspSerSerGluSerSerPheGly-555  
 560-PheArgGluAsnLeuTyrTyrGlyAsnAspArgIleAsnThrAlaAsnSer-576  
 581-ValGlnSerArgIleLeuAspGlyGluAlaThrGlyGluGluArgPheArgAlaGlyIleGlyGlnLysPheTyrPheLysAsnAspAlaValMetLeuAspGlySerValGlyLysLysProArgSerArgSerAspTrp-626  
 631-SerGlyIleGlySerArgPheIleLeuAspSerSerIleHisTyrAsnGlnAsnAspLysArgAlaGluAsn-655  
 660-AlaSerTyrArgProAlaGlnGlyLysValLeuAsnAlaArgTyrLysTyrGlyArgAsnGluLysIleTyrLeuLysSerAspGlySerTyrPhe-691  
 693-AspLysLeuSerGln-697  
 718-TyrGlyPheGluAlaLysProIleGlu-727  
 732-AlaGluTyrLysSerSerCysGlyCysTrp-741  
 751-ValIleGlyGluAsnThrTyrLysAsn-759  
 766-GlnLeuLysAspLeuSerSerValGlyArgAsnProAlaAspArgMetAspVal-783

**Hydrophilic Regions - Hopp-Woods**

28-ValAlaAlaGluGluThrAspAsnProThr-37  
 40-GlySerValArgSerValSerGluProIleGln-50  
 65-AsnGluSerGlySerProGluArgThrGluAlaAlaVal-77  
 79-GlySerGlyGluAlaSerIleProGluAspTyrThr-90  
 93-ValAlaAspArgMetGluGlyGlnSer-101

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103-ValGlnValArgAlaGluGly-109  
 111-ValValValGluArgAsnArgThrThrLeu-120  
 125-AlaAspTyrAspGlnSerGlyAspThrValThrAlaGlyAspArgPheAlaLeu-142  
 147-ThrLeuIleArgGlyGluThr-153  
 160-GlnGlnThrGlyGluAlaHisAsnValArgMetGluThrGluHisGlyGlyArgArgLeuGlnSerValSer  
 ArgThrAlaGluMetLeuGly-190  
 192-GlyHisTyrLysLeuThrGlu-198  
 216-AlaSerValGlnAlaAspArgGluLysGlyIleGly-227  
 250-ProLeuAspGlyAsnArgLysSerGly-258  
 266-AlaGlySerAspGlyVal-271  
 294-IleGlyGluArgGlyIlaVal-300  
 305-ValArgTyrLeuArg-309  
 323-HisAspLysLysSerGlyArgAsnAsnArgTyrGlnAla-335  
 337-TrpGlnHisArgHisAspIleSerAsp-345  
 410-SerGlyTyrLysAspProTyr-417  
 423-LeuSerAlaAspTrpArgLysAsnThrGlyArgAla-434  
 445-PheSerHisAspSerArgGlnAspGlySerArg-455  
 490-GlySerGlnGluAlaArgArgValSerArg-499  
 510-MetThrPheGluArgAsnThrArg-517  
 539-LysSerGlnAsnAsp-543  
 548-AspSerSerGluSer-552  
 569-AspArgIleAsnThr-573  
 589-AlaThrGlyGluGluArgPheArgAla-597  
 615-SerValGlyLysLysProArgSerArgSerAsp-625  
 648-GlnAsnAspLysArgAlaGluAsn-655  
 662-TyrArgPrcAlaGln-666  
 674-TyrLysTyrGlyArgAsnGluLysIleTyrLeuLysSerAspGly-688  
 720-PheGluAlaLysLysProIleGlu-727  
 732-AlaGluTyrLysSer-736  
 766-GlnLeuLysAspLeuSerSerValGlyArgAsnProAlaAspArgMetAspVal-783  
**a959**  
**AMPHI Regions - AMPHI**  
 56-AlaAlaLeuAlaArgValGlyGly-63

**Antigenic Index - Jameson-Wolf**

24-AlaHisHisAspGlyHisGlyAspAspAspHisGlyHis-36  
 40-GlnHisSerLysGlnAspLysIleIleSer-49  
 51-AlaGlnAlaGluLysAlaAlaLeu-58  
 60-ArgValGlyGlyLysIleThrAspIleAspLeuGluHisAspAsnGlyArgProHisTyrAspValGluIleV  
 alLysAsnGlyGlnGluTyr-90  
 94-ValAspAlaArgThrGlyArgValIleSerSerArgArgAspAsp-108

**Hydrophilic Regions - Hopp-Woods**

27-AspGlyHisGlyAspAspAspHisGlyHis-36  
 40-GlnHisSerLysGlnAspLysIleIleSer-49  
 51-AlaGlnAlaGluLysAlaAlaLeu-58  
 61-ValGlyGlyLysIleThrAspIleAspLeuGluHisAspAsnGlyArgProHisTyr-79  
 82-GluIleValLysAsnGlyGlnGluTyr-90  
 94-ValAspAlaArgThrGlyArg-100  
 102-IleSerSerArgArgAspAsp-108  
**a972**

**AMPHI Regions - AMPHI**

15-SerSerGluArgMetSerGluValGluTyrPheSerHis-27  
 83-ArgLysLeuGluGluIleLeuGly-90  
 100-ArgGlyAsnLysPheTyrGluSerMetTyrArgLeu-111

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154-LeuAspAspSerIleArg-159  
 226-PheValArgValTyrGluLysGly-233  
 275-IleCysArgLysPheLysAsnMetProValPro-285  
 308-AsnAlaValGlyLysLeuValAsnPhe-316  
 326-GluIleValGluSerLeuLysAla-333  
 336-GlyPheProLysGlyLeuGlu-342  
 348-LeuGluMetLeuArgAspGlyLeuLys-356  
 382-AsnSerAspLysPheAspArg-388

**Antigenic Index - Jameson-Wolf**

1-LeuThrAsnArgGlyGlyAlaIlysThrAsnSerLysSerGluArgMetSerGlu-21  
 29-IleSerAspGlyLysGlyLysLeuLeuGluIleProGlnArgArgGlyLysGlnAspGlyVal-49  
 62-ThrLeuLeuLysValSerGly-68  
 83-ArgLysLeuGluGlu-87  
 93-IleThrArgLysCysLysSerArgGlyAsnLysPheTyrGlu-106  
 108-MetTyrArgLeuGlySerAspAspValAspTyrGly-119  
 122-HisPheGlyGlyGlnArgAsnThrVal-130  
 134-LeuLysGlyThrGlyCys-139  
 152-GlnPheLeuAspAspSerIleArgThrArgIleThrArg-164  
 172-PheAspGlyGluTyrThrProAspGlnAlaLeuLeuAspHisAspAsnGlyPhePheAspAsnSerAsnGln  
 ArgProLysSerGluThrIleGly-203  
 205-AlaTrpArgAsnGlnAspGlySerGlyLys-214  
 217-TyrValGlyArgLysLysAsnSerArgPhe-226  
 228-ArgValTyrGluLysGlyArgGlnLeuGlyAspLysGluSerLysTrpVal-244  
 251-AsnTyrGlyAspIleGluIle-257  
 263-IleAsnGlnGlySer-267  
 275-IleCysArgLysPheLysAsnMetProValProGluArgPheAspGlnArgLysLysThrLeu-295  
 321-GlyPheAspAsnSerIleValGluSerLeuLysAlaAspSerGlyPheProLysGlyLeuGluProGlu  
 LysTyrAla-347  
 350-MetLeuArgAspGlyLeuLys-356  
 361-HisGluGlnProAspIleAspLeuGluIleGluLeuAspGlu-374  
 380-PheLysAsnSerAspLysPheAspArgGluLysArgLeuPheSerProAspTyrAspValGluLysGluArg  
 LysTyrGlnGluTyrLeu-409  
 417-ValAspTyrAspTyrPhe-422

**Hydrophilic Regions - Hopp-Woods**

1-LeuThrAsnArgGlyGlyAlaIlysThrAsnSerLysSerGluArgMetSerGlu-21  
 30-SerAspGlyLysGlyLysLeuLeuGluIleProGlnArgArgGlyLysGlnAspGlyVal-49  
 83-ArgLysLeuGluGlu-87  
 93-IleThrArgLysCysLysSerArgGlyAsnLysPheTyr-105  
 111-LeuGlySerAspAspValAspTyrGly-119  
 134-LeuLysGlyThrGly-138  
 152-GlnPheLeuAspAspSerIleArgThrArgIleThrArg-164  
 181-AlaLeuLeuAspHisAspAsnGlyPhe-189  
 193-SerAsnGlnArgProLysSerGluThrIle-202  
 206-TrpArgAsnGluAspGlySerGly-213  
 219-GlyArgLysLysAsnSerArgPhe-226  
 228-ArgValTyrGluLysGlyArgGlnLeuGlyAspLysGluSerLysTrpVal-244  
 277-ArgLysPheLysAsn-281  
 283-ProValProGluArgPheAspGlnArgLysLysThrLeu-295  
 321-GlyPheAspAsnSerGluIleValGluSerLeuLysAlaAspSerGlyPhe-337  
 339-LysGlyLeuGluProGluLysTyrAla-347  
 350-MetLeuArgAspGlyLeuLys-356  
 362-GluGlnProAspIleAspLeuGluIleGluLeuAspGlu-374  
 381-LysAsnSerAspLysPheAspArgGluLysArgLeuPhe-393

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396-AspTyrAspValGluLysGluArgLysTyrGlnGluTyrLeu-409  
**a973**

**AMPHI Regions - AMPHI**

12-GluArgLeuIleAlaArgLeuAlaArgGluProAspSerAla-25  
 44-AspThrLeuLeuArgLeuGluLysValLeuAspPhe-55  
 77-AspSerIleGluArgIleThrAlaTyr-85  
 112-AspLeuLeuLysTyrMet-117  
 143-AlaLeuLeuLysGluPheArgGluGln-151  
 171-PheGluAspIleIleGluGlnIleValGlyAspIleGluAsp-184  
 208-AlaThrGluIleGluAspIleAsnAlaPhe-217  
 235-IleGlnGluLeuGly-239

**Antigenic Index - Jameson-Wolf**

1-MetAspGlyAlaGlnProLysThrAsnPhe-10  
 18-LeuAlaArgGluProAspSerAlaGluAsp-27  
 34-GlnAlaHisGluGlnGluValPheAspAlaAspThr-45  
 47-LeuArgLeuGluLysValLeuAsp-54  
 56-SerAspLeuGluValArgAspAlaMetIleThrArgSerArgMetAsnValLeuLysGluAsnAspSerIleGluArg-81  
 96-ValIleGlyGluAspLysAspGluVal-104  
 118-PheAsnProGluGlnPheHis-124  
 136-ProGluGlyLysSer-140  
 146-LysGluPheArgGluGlnArgAsnHis-154  
 159-IleAspGluIleTyrGlyGlyThrSerGly-167  
 178-IleValGlyAspIleGluAspGluPheAspGluAspGluSerAlaAspAsn-194  
 199-SerAlaGluArgTrpArg-204  
 209-ThrGluIleGluAsp-213  
 219-GlyThrGluTyrSerSerGluGluAlaAspThr-229  
 239-GlyHisLeuProValArgGlyGluLysValLeu-249  
 258-AlaArgAlaAspAsnArgArgLeuHis-266

**Hydrophilic Regions - Hopp-Woods**

1-MetAspGlyAlaGlnProLys-7  
 18-LeuAlaArgGluProAspSerAlaGluAsp-27  
 34-GlnAlaHisGluGlnGluValPheAsp-42  
 47-LeuArgLeuGluLysValLeuAsp-54  
 56-SerAspLeuGluValArgAspAlaMetIleThrArgSerArgMetAsnValLeuLysGluAsnAspSerIleGluArg-81  
 96-ValIleGlyGluAspLysAspGluVal-104  
 136-ProGluGlyLysSer-140  
 146-LysGluPheArgGluGlnArgAsn-153  
 178-IleValGlyAspIleGluAspGluPheAspGluAspGluSerAlaAspAsn-194  
 199-SerAlaGluArgTrpArg-204  
 209-ThrGluIleGluAsp-213  
 222-TyrSerSerGluGluAlaAspThr-229  
 243-ValArgGlyGluLysValLeu-249  
 258-AlaArgAlaAspAsnArgArgLeuHis-266  
**a981**

**AMPHI Regions - AMPHI**

31-AlaAsnProAspLysValTyrArgValAlaSer-41  
 46-AlaProPheGluSerLeuAsp-52  
 66-AsnAlaMetAlaLys-70  
 132-LysIleSerSerSerGluAspLeuLysAsnMetAsnLysValGlyValVal-148  
 167-LysIleAlaArgPheGlu-172  
 181-LeuGluAsnGlyGlyLeuAspSerValVal-190

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197-AlaAsnTyrValLysAsnAsnPro-204  
 207-GlyMetAspPheValThrLeuPro-214  
 233-ValLysMetLeuAsnAspAlaLeuLysLysValArgGluSerGlyGluTyr-249

**Antigenic Index - Jameson-Wolf**

19-CysGlyGlnGlyLysAspAlaAlaAla-28  
 31-AlaAsnProAspLysValTyrArg-38  
 49-GluSerLeuAspSerLysGlyAsnValGluGlyPheAsp-61  
 76-IleGluPheLysHisGlnProTrpAspSer-85  
 90-LeuAsnAsnGlyAspAlaAspVal-97  
 104-IleThrAspAspArgLysGlnSerMetAspPheSerAspProTyrPhe-119  
 127-ValProLysGlyLysIleSerSerSerGluAspLeuLysAsnMetAsnLys-144  
 160-LeuLeuGlyAsnAspAsnProLysIleAlaArg-170  
 179-LysGluLeuGluAsnGlyGlyLeuAspSerValValSerAspSerAla-194  
 201-LysAsnAsnProThrLysGlyMetAspPhe-210  
 214-ProAspPheThrThr-218  
 225-ValArgLysGlyAspGluAlaThrVal-233  
 235-MetLeuAsnAspAlaLeuLysLysValArgGluSerGlyGluTyrAspLysIleTyr-253  
 257-PheAlaLysGluAspGlyGlnAlaAlaLys-266

**Hydrophilic Regions - Hopp-Woods**

21-GlyGlnGlyLysAspAlaAlaAla-28  
 31-AlaAsnProAspLysValTyrArg-38  
 49-GluSerLeuAspSerLysGlyAsnValGluGlyPheAsp-61  
 91-AsnAsnGlyAspAlaAspVal-97  
 104-IleThrAspAspArgLysGlnSerMetAspPheSer-115  
 128-ProLysGlyLysIleSerSerSerGluAspLeuLysAsnMetAsn-143  
 164-AspAsnProLysIleAlaArg-170  
 179-LysGluLeuGluAsnGlyGlyLeu-186  
 203-AsnProThrLysGlyMetAsp-209  
 225-ValArgLysGlyAspGluAlaThrVal-233  
 235-MetLeuAsnAspAlaLeuLysLysValArgGluSerGlyGluTyrAspLysIleTyr-253  
 257-PheAlaLysGluAspGlyGlnAlaAlaLys-266

a982

**AMPHI Regions - AMPHI**

12-ValArgGlnLysMetValAsnGlyValAsnIleLeuAlaAsnAlaVal-27  
 71-AlaGlnMetValLysGluValAlaSerLysThr-81  
 100-ValAlaGluGlyMetLysTyr-106  
 115-AspLeuLysArgGlyIleAspLysAlaValAlaAlaLeuValGluGluLeuLysAsnIleAlaLysProCys  
 AspThrSerLysGluIleAlaGlnValGlySer-149  
 160-AlaIleIleAlaGluAlaMetGluLysValGly-170  
 185-AsnGluLeuAspValValGluGlyMet-193  
 209-GluLysGlnIleAlaGlyLeuAsp-216  
 227-IleSerAsnIleArgGlyIleLeuLysThrValAla-243  
 265-AsnAsnIleArgGlyIleLeuLysThrValAla-275  
 313-ThrLeuAspAspLeuGlyGlnAlaLysArgIle-323  
 331-ThrIleIleAspGlyPheGlyAspAlaAla-340  
 367-GluArgValAlaLysLeuAlaGlyGlyVal-376  
 426-LeuGluAsnLeuHisThr-431  
 444-LeuArgAlaValGluSerProLeuArgGlnIleValAlaAsnAla-458  
 484-GluTyrGlyAspMetIleGluMet-491  
 500-ThrArgSerAlaLeu-504

**Antigenic Index - Jameson-Wolf**

1-MetAlaAlaLysAspValGlnPhe-8

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10-AsnGluValArgGlnLysMetValAsn-18  
 30-ThrLeuGlyProLysGlyArgAsnValValVal-40  
 43-AlaPheGlyGlyProHisIleThrLysAspGlyValThrValAlaLysGluIleGluLeuLysAspLysPheG  
 luAsnMetGly-70  
 73-MetValLysGluValAlaSerLysThrAsnAspValAlaGlyAspGlyThrThr-90  
 112-AsnProThrAspLeuLysArgGlyIleAspLysAlaVal-124  
 129-GluGluLeuLysAsnIleAlaLysProCysAspThrSerLysGluIleAla-145  
 150-IleSerAlaAsnSerAspGluGlnVal-158  
 164-GluAlaMetGluLysValGlyLysGluGlyValIleThrValGluAspGlyLysSerLeuGluAsnGluLeu  
 AspVal-189  
 193-MetGlnPheAspArgGlyTyr-199  
 207-AspAlaGluLysGlnIleAla-213  
 223-PheAspLysLysIleSerAsnIleArgAsp-232  
 239-GlnValAlaLysAlaSerArg-245  
 252-GluAspValGluGlyGluAla-258  
 266-AsnIleArgGlyIleLeu-271  
 278-AlaProGlyPheGlyAspArgArgLysAlaMetLeu-289  
 301-IleSerGluValGluLeuSerLeuGluLysAlaThrLeuAspAspLeuGlyGlnAlaLysArgIleGlu  
 IleGlyLysGluAsnThrThr-331  
 334-AspGlyPheGlyAspAlaAlaGlnIleGluAlaArgValAlaGluIleArgGlnGlnIleGluThrAlaThr  
 SerAspTyrAspLysGluLysLeuGlnGluArgValAlaLysLeuAlaGly-374  
 385-ThrGluValGluMetLysGluLysLysAspArgValGluAspAlaLeuHis-401  
 405-AlaAlaValGluGluGlyVal-411  
 421-ArgAlaArgAlaAlaLeu-426  
 429-LeuHisThrGlyAsnAlaAspGlnAspAlaGlyVal-440  
 446-AlaValGluSerProLeuArg-452  
 457-AsnAlaGlyGlyAspProSerVal-464  
 469-ValLeuGluGlyLysGlyAsnTyrGlyTyr-478  
 480-AlaGlySerGlyGluTyrGlyAspMetIleGlu-490  
 495-AspProAlaLysValThrArgSerAlaLeu-504  
 523-GluIleProGluAspLysProAlaMetProAspMetGlyGly-536

**Hydrophilic Regions - Hopp-Woods**

1-MetAlaAlaLysAspValGlnPhe-8  
 10-AsnGluValArgGlnLysMet-16  
 33-ProLysGlyArgAsnValValVal-40  
 48-HisIleThrAspGlyValThrAlaLysGluIleGluLeuLysAspLysPheGluAsn-68  
 73-MetValLysGluValAlaSerLysThrAsnAspValAlaGlyAspGlyThrThr-90  
 114-ThrAspLeuLysArgGlyIleAspLysAlaVal-124  
 129-GluGluLeuLysAsnIleAlaLysProCysAspThrSerLysGluIleAla-145  
 152-AlaAsnSerAspGluGlnVal-158  
 164-GluAlaMetGluLysValGlyLysGluGlyValIleThrValGluAspGlyLysSerLeuGluAsnGluLeu  
 AspVal-189  
 207-AspAlaGluLysGlnIleAla-213  
 223-PheAspLysLysIleSerAsnIleArgAsp-232  
 239-GlnValAlaLysAlaSerArg-245  
 252-GluAspValGluGlyGluAla-258  
 280-GlyPheGlyAspArgArgLysAlaMetLeu-289  
 301-IleSerGluGluValGlyLeuSerLeuGluLysAlaThrLeuAspAspLeuGlyGlnAlaLysArgIleGlu  
 IleGlyLysGluAsnThrThr-331  
 340-AlaGlnIleGluAlaArgValAlaGluIleArgGlnGlnIleGluThrAlaThrSerAspTyrAspLysGlu  
 LysLeuGlnGluArgValAlaLys-371  
 385-ThrGluValGluMetLysGluLysLysAspArgValGluAspAlaLeuHis-401  
 405-AlaAlaValGluGluGlyVal-411  
 421-ArgAlaArgAlaAlaLeu-426

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432-GlyAsnAlaAspGlnAspAla-438  
 446-AlaValGluSerProLeu-451  
 458-AlaGlyGlyGluPro-462  
 469-ValLeuGluGlyLysGly-474  
 481-GlySerGlyGluTyrGlyAsp-487  
 495-AspProAlaLysValThrArg-501  
 523-GluIleProGluAspLysProAlaMet-531  
**a986**

**AMPHI Regions - AMPHI**  
 6-GlnTyrLeuAlaLeuAla-11  
 18-LeuAlaGlyCysAspLysAlaGly-25  
 36-SerPheValGluArgIleLysHis-43  
 52-MetLeuLeuProAspPheValGlnLeuVal-61  
 97-AspProPheTyrPhePheLysArgLeuValProAsnMetProGluIleProGln-115  
 145-ThrGlyMetGlySerIle-150  
 162-AlaLysLeuIleGlySerAspVal-169  
 189-IleGlyAsnProLysAspLeuLysProGly-198  
 200-TrpValAlaAlaIleGly-205  
 287-AlaGluGlnLeuLysAsnThrGlyLysVal-296  
 393-AlaAlaGluHisIleGlyAlaSer-400  
 471-ArgLysAlaMetAspLysAla-477

**Antigenic Index - Jameson-Wolf**  
 1-ValPheLysLysTyr-5  
 20-GlyCysAspLysAlaGly-25  
 29-GlyAlaAspLysLysGluAlaSerPheValGluArgIleLysHisThrLysAspAspGlySerVal-50  
 61-ValGlnSerGluGlyProAla-67  
 75-ProAlaProArgThrGlnAsnSerSerAsnAlaGluThrAspSerAspProLeuAlaAspSerAspProP  
 he-99  
 104-LysArgLeuValProAsnMetProGluIleProGlnGluGluAlaAspAspGlyGlyLeu-123  
 130-IleIleSerLysAspGlyTyr-136  
 154-LeuAsnAspLysArgGluTyrThr-161  
 165-IleGlySerAspValGlnSerAspValAla-174  
 179-AspAlaThrGluGluLeuPro-185  
 189-IleGlyAsnProLysAspLeuLysProGlyGlu-199  
 208-PheGlyPheAspAsnSerValThr-215  
 218-XxxValSerAlaLysGlyArgSerLeuProAsnGluSerTyr-231  
 242-AsnProGlyAsnSerGlyGlyPro-249  
 265-TyrSerArgSerGlyGly-270  
 288-GluGlnLeuLysAsnThrGlyLysValGlnArgGlyGlnLeu-301  
 316-PheGlyLeuAspLysAlaGlyGly-323  
 330-LeuProGlySerProAlaGluArgAlaGlyLeuArgAlaGlyAsp-344  
 349-LeuAspGlyGlyGluIleArgSerSerGlyAspLeu-360  
 368-ThrProGlyLysGluValSer-374  
 378-TrpArgLysGlyGluGluIleThrIle-386  
 397-IleGlyAlaSerSerLysThrAspGluAlaProTyrThrGluGlnGlnSerGlyThrPhe-416  
 427-ThrHisThrAspSerSerGlyGly-434  
 440-ArgValSerAspAlaAlaGluArgAlaGlyLeuArgArgGlyAspGluIleLeu-457  
 463-ProValAsnAspGluAlaGlyPheArgLysAlaMetAspLysAlaGlyLysAsnVal-481  
 486-MetArgArgGlyAsnThr-491

**Hydrophilic Regions - Hopp-Woods**

20-GlyCysAspLysAlaGly-25  
 29-GlyAlaAspLysLysGluAlaSerPheValGluArgIleLysHisThrLysAspAspGlySer-49

75-ProAlaProArgThrGlnAsnGlySerSerAsnAlaGluThrAspSerAspProLeuAlaAspSerAspPro-  
 98  
 111-ProGlulleProGlnGluGluAlaAspAspGlyGly-122  
 131-IleSerLysAspGly-135  
 154-LeuAsnAspLysArgGluTyrThr-161  
 179-AspAlaThrGluGluLeuPro-185  
 190-GlyAsnProLysAspLeuLysPro-197  
 219-ValSerAlaLysGlyArgSerLeuPro-227  
 288-GluGlnLeuLysAsnThrGlyLysValGlnArgGlyGln-300  
 317-GlyLeuAspLysAlaGly-322  
 333-SerProAlaGluArgAlaGlyLeuArgAlaGlyAsp-344  
 350-AspGlyGlyGluIleArgSerSerGlyAsp-359  
 368-ThrProGlyLysGluValSer-374  
 379-ArgLysGlyAlaSerSerLysThrAspGluAlaProTyrThrGluGlnGlnSer-413  
 428-HisThrAspSerSerGly-433  
 440-ArgValSerAspAlaAlaGluArgAlaGlyLeuArgArgGlyAspGluIleLeu-457  
 463-ProValAsnAspGluAlaGlyPheArgLysAlaMetAspLysAlaGlyLys-479  
**a987**  
**AMPHI Regions - AMPHI**  
 17-CysSerSerTrpLeu-21  
 33-PheAsnThrSerLysProValArgLeuAspAsnIleLeuGlnIle-47  
 65-ProHisGluAlaPhe-69  
 144-AsnProPheValLeuArgLysTrpArgAlaLeuGlyTyrLeuThrAspPheProArgLeuAsnArg-165  
 187-GlyAspGluTyrPheLysVal-193  
 202-LeuAspIleLeuAlaThr-207  
 211-ValGlyGluValSerIleAspPheAspArgTyrTrpAla-223  
 230-AlaThrArgIleIleArgSerGly-237  
 239-IleGlyLysGlyLeuGlnAla-245  
 289-SerAspAspProAlaLysGlyLeuAspArg-298  
 307-GlyArgLeuGlnAspAlaLeuLysGlnPro-316  
 333-GlyThrAspAlaLeuAlaLysLeuValGlnAsp-343  
 355-GlnAlaThrAspValAlaAla-361  
 443-LysIleAlaGluGlnMetGluArgThrLeuAlaAspThr-455  
 486-ProGluAlaLysLeuTrpLysArgIleAlaAlaLysIleLeuSerLeuLeuProIleGluSerLeu-507

**Antigenic Index - Jameson-Wolf**

1-MetLysThrArgSer-5  
 23-ProLeuGluGluArgThrGluSerArgHisPheAsnThrSerLysProValArgLeu-41  
 49-HisThrProHisThrAsnGlyLeuSer-57  
 77-GluSerAlaGluHisSerLeu-83  
 90-TrpArgAsnAspIleSerGlyArgLeu-98  
 107-AlaGluArgGlyValArg-112  
 115-LeuLeuAspAspAsnAsnThrArgGlyLeuAsp-126  
 134-SerHisProAsnIleGluValArgLeu-142  
 159-AspPheProArgLeuAsnArgArgMetHisAsnLysSerPheThrAlaAspAsnArgAla-178  
 182-GlyGlyArgAsnIleGlyAspGluTyrPheLysValGlyGluAspThrVal-198  
 214-ValSerHisAspPheAspArgTyrTrp-222  
 225-HisSerAlaHisAsn-229  
 232-ArgIleIleArgSerGlyAsnIleGlyLysGlyLeu-243  
 247-GlyTyrAsnAspGluThrSerArg-254  
 259-ArgTyrArgGluThrValGlu-265  
 267-SerProLeuTyrGln-271  
 273-IleGlnThrGlyArgIleAsp-279  
 287-LeuIleSerAspAspProAlaLysGlyLeuAspArgAspArgArgLysProProIle-305

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308-ArgLeuGlnAspAlaLeuLysGlnProGluLysSer-319  
 328-ValProThrLysSerGlyThrAspAlaLeu-337  
 340-LeuValGlnAspGlyIleAsp-346  
 367-ValllysTyrArgLysProLeuLeu-374  
 391-AlaThrLysAspLysGlyLeuThrGlySerSer-401  
 412-ValAspGlyLysArgIlePhe-418  
 422-PheAsnLeuAspProArgSerAlaArgLeuAsnThr-433  
 440-GluSerProLysIleAlaGluGlnMetGluArgThrLeuAlaAspThrSerProGluTyrAla-460  
 463-ValThrLeuAspArgHisAsnArgLeuGlnTrpHisAspProAlaThrArgLysThrTyrProAsnGluPro  
 GluAlaLysLeuTrpLys-492

#### **Hydrophilic Regions - Hopp-Woods**

1-MetLysThrArgSer-5  
 24-LeuGluGluArgThrGluSerArgHisPheAsnThr-35  
 37-LysProValArgLeu-41  
 77-GluSerAlaGluHisSerLeu-83  
 107-AlaGluArgGlyValArg-112  
 115-LeuLeuArgLysAspAsnAsnThrArgGlyLeuAsp-126  
 161-ProArgLeuAsnArgArgMetHisAsn-169  
 172-PheThrAlaAspAsnArgAla-178  
 189-GluTyrPheLysValGlyGluAspThrVal-198  
 214-ValSerHisAspPheAspArg-220  
 248-TyrAsnAspGluThrSerArg-254  
 259-ArgTyrArgGluThrValGlu-265  
 274-GlnThrGlyArgIleAsp-279  
 287-LeuIleSerAspAspProAlaLysGlyLeuAspArgAspArgArgLysProProIle-305  
 308-ArgLeuGlnAspAlaLeuLysGlnProGluLysSer-319  
 331-LysSerGlyThrAspAlaLeu-337  
 340-LeuValGlnAspGlyIleAsp-346  
 367-ValllysTyrArgLysProLeuLeu-374  
 391-AlaThrLysAspLysGlyLeuThr-398  
 424-LeuAspProArgSerAlaArgLeuAsnThr-433  
 440-GluSerProLysIleAlaGluGlnMetGluArgThrLeuAlaAspThrSerPro-457  
 464-ThrLeuAspArgHisAsnArg-470  
 476-ProAlaThrArgLysThrTyrProAsnGluProGluAlaLysLeuTrpLys-492  
**a988**

#### **AMPHI Regions - AMPHI**

45-SerLysIleGluAlaLeu-50  
 66-ArgArgLeuLysAlaMet-71  
 125-GlnMetArgGlyIle-129  
 154-AspIleValGluArgAlaGlnSerLysVal-163  
 221-AlaLysIleIleGluValLeuGlyAspTyrAlaAsp-232  
 248-HisGlnPheSerGluAlaCysAlaLysAlaAlaLysLysIleProAspHisValArgLys-267  
 288-ThrAlaArgAspPheAspAsp-294  
 299-GluLysIleGlyArgAsnTyrArg-306  
 310-AlaIleAlaAspValSerHisTyrValArgProAspAsp-322  
 348-AsnLeuSerAsnGly-352  
 396-AsnGlnValTrpLysTrpLeuSer-403  
 405-GlyIleGluHisPro-409  
 411-LysThrGlnIleAspThrLeuTyrLysLeuPheLysIleLeuGlnLys-426  
 494-LeuGlyProThrProGluLysLeuAlaAlaLeu-504  
 524-LysAspTyrAlaAlaLeuAla-530  
 544-ValMetMetLeuArgSerMetGlnGlnAla-553  
 569-AlaTyrAlaHisPheThrSerProIleArgArgTyrProAspLeuThrValHisArgAlaIleLysAlaVal  
 Leu-593

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619-AspAspAlaSerArgAspValGluAsnTrpLeuLys-630  
 646-IleSerGlyMetThrSerPheGlyIlePheValThrLeu-658  
 662-HisIleAspGlyLeuValHisIleSerAspLeuGlyGlu-674

**Antigenic Index - Jameson-Wolf**

1-MetAsnLysAsnIleLys-6  
 8-LeuAsnLeuArgGluLysAspProPheLeuSerArgGluLysGlnArgTyrGluHisProLeuProSerArgGluTrpIle-34  
 37-LeuLeuGluArgLysGlyValProSerLysIleGluAlaLeuValArg-52  
 54-LeuSerIleLysGluGluGluTyrGluPhePheGluArgArgLeuLysAlaMetAlaArgAspGlyGln-76  
 79-IleAsnArgArgGlyAlaVal-85  
 87-AlaAlaAspLysLeuAspLeuValLysCysArgValLysAlaHisLysAspArgPheGlyPhe-107  
 111-LeuThrProAlaLysAspGlyAsp-118  
 124-ArgGlnMetArgGly-128  
 140-AlaGlyMetAspGlyArgGlyArgArgGluGlyThrVal-152  
 155-IleValGluArgAlaGlnSerLysValValGly-165  
 167-PheCxxMetAspArgGlyValAla-174  
 176-LeuGluProGluAspLysArgLeuAsnGln-185  
 189-LeuGluProAspGlyValAlaArgPheLysProGluSerGlyGln-203  
 210-GluValTyrProGluGlnAsnArgProAlaVal-220  
 227-LeuGlyAspTyrAlaAspSerGlyMetGluIle-237  
 239-IleAlaValArgLysHisHisLeu-246  
 253-AlaCysAlaLysAlaAlaLysLysIleProAspHisValArgLysSerAspLeuLysGlyArgValAspLeuAspAsp-278  
 283-ThrIleAspGlyGluThrAlaArgAspPheAspAsp-294  
 299-GluLysIleGlyArgAsnTyrArg-306  
 316-HisTyrValArgProAspAspAlaIleAspThrAspAlaGlnGluArgSerThrSerVal-335  
 337-PheProArgArgVal-341  
 345-LeuProGluAsnLeuSerAsnGly-352  
 374-AlaGlyAsnIleLysGluTyrArgPhe-382  
 402-LeuSerGlyIleGluHisProPheLysThrGlnIle-414  
 424-LeuGlnLysLysArgPheGluArgGlyAlaValGluPheAspSerIleGlu-440  
 443-MetLeuPheAspAspAsnGlyLysIleGluLys-453  
 458-ValArgAsnAspAlaHisLysLeuIleGlu-467  
 482-LeuLysAsnLysHisThrAla-488  
 493-HisLeuGlyProThrProGluLysLeuAlaAlaLeuArgGluGlnLeu-508  
 516-GlyGlyGlyAspAsnProSerProLysTyrAla-527  
 532-GlnPheLysGlyArgProAspAlaGluLeu-541  
 556-GluProHisCysAspGlyHis-562  
 575-SerProIleArgArgTyrProAspLeuThrVal-585  
 597-ThrTyrThrProLysLysSerTrp-604  
 613-PheCysGluArgArgAlaAspAspAlaSerArgAspValGluAsn-627  
 633-TyrMetArgAspLysValGlyGluValPheGluGlyLysIleSerGly-648  
 670-SerAspLeuGlyGluAspTyrPheAsnPheArgPro-681  
 683-IleMetAlaIleGluGlyGluArgSerGlyIleArgPheAsnMetGlyAspArgValAlaValArgValAlaArgAlaAspLeuAspAspGlyLysIle-715  
 722-GlyGlySerGlyArgGlyArgLysValLysSerSerAlaSerAlaLysProAlaGlyThrAlaGlyLysGlyLysProLysThrAlaAlaGluLysLysThrAlaArgGlyGlyLysValArgGlyArgGlyAlaSerAlaAlaAlaAlaGluSerArgLysLysAlaLysLysProValProlleLysValLysLysArgLysGlyLysSer-791

**Hydrophilic Regions - Hopp-Woods**

1-MetAsnLysAsnIleLys-6  
 8-LeuAsnLeuArgGluLysAspProPheLeuSerArgGluLysGlnArgTyrGluHis-26  
 37-LeuLeuGluArgLysGlyValProSerLysIleGluAlaLeuValArg-52

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54-LeuSerIleLysGluGluGluTyrGluPhePheGluArgArgLeuLysAlaMetAlaArgAspGlyGln-76  
 79-IleAsnArgArgGlyAla-84  
 87-AlaAlaAspLysLeuAspLeuValLysCysArgValLysAlaHisLysAspArgPhe-105  
 113-ProAlaLysAspGlyAsp-118  
 140-AlaGlyMetAspGlyArgGlyArgArgGluGlyThrVal-152  
 155-IleValGluArgAlaGlnSerLysValValGly-165  
 167-PheXxxMetAspArgGlyValAla-174  
 176-LeuGluProGluAspLysArgLeuAsn-184  
 189-LeuGluProAspGlyValAlaArgPheLysProGluSerGly-202  
 210-GluValTyrProGluGlnAsnArgProAlaVal-220  
 230-TyrAlaAspSerGlyMetGluIle-237  
 239-IleAlaValArgLysHisHis-245  
 253-AlaCysAlaLysAlaAlaLysLysIleProAspHisValArgLysSerAspLeuLysGlyArgValAspLeu  
 ArgAsp-278  
 284-IleAspGlyGluThrAlaArgAspPheAspAsp-294  
 300-LysIleGlyArgAsnTyr-305  
 318-ValArgProAspAspAlaIleAspThrAspAlaGlnGluArgSerThr-333  
 376-AsnIleLysGluTyrArg-381  
 424-LeuGlnLysLysArgPheGluArgGlyAlaValGluPheAspSerIleGlu-440  
 443-MetLeuPheAspAspAsnGlyLysIleGluLys-453  
 458-ValArgAsnAspAlaHisLysLeuIleGlu-467  
 496-ProThrProGluLysLeuAlaAlaLeuArgGluGlnLeu-508  
 517-GlyGlyAspAsnProSerProLysAspTyrAla-527  
 533-PheLysGlyArgProAspAlaGluLeu-541  
 576-ProIleArgArgTyrProAsp-582  
 598-TyrThrProLysLysSerTrp-604  
 613-PheCysGluArgAlaAspAspAlaSerArgAspValGluAsn-627  
 633-TyrMetArgAspLysValGlyGluValPheGluGlyLysIle-646  
 683-IleMetAlaIleGluGlyGluArgSerGlyIle-693  
 696-AsnMetGlyAspArgValAlaValArgValAlaArgAlaAspLeuAspAspGlyLysIle-715  
 723-GlySerGlyArgGlyArgLysSerSerAlaSerAlaLysProAlaGlyThrAlaGlyLysGlyLys  
 ProLysThrAlaAlaGluLysThrAlaArgGlyGlyLysValArgGlyArgGlyAlaSerAlaAlaAlaGluS  
 erArgLysLysAlaLysLysProValProIleLysValLysLysArgLysGlyLysSer-791  
**a989**  
**AMPHI Regions - AMPHI**  
 58-AlaGlyLeuThrLysLeu-63  
 85-SerAlaThrAspPhe-89  
 98-LysSerGlyLysIleThr-103  
 109-ProHisIleTyrGlyAla-114  
 183-GluLeuArgLysTyrAlaAspTrpGlyIleMetGluLysAlaLysAlaLeu-199  
  
 201-GluThrProProAsnProThrLysAla-209  
 299-SerValHisGlyMetTyrLysValSer-307  
 318-TrpThrArgHisSerArg-323  
 362-SerTyrGlnIleSerGluProLeu-369  
 448-PheLysAsnHisAlaAsp-453

**Antigenic Index - Jameson-Wolf**

43-AlaAlaAlaGluAlaAlaAspAlaSer-51  
 57-ProAlaGlyLeuThrLysLeuAspSerSerGlnIleSer-69  
 81-TyrGluAlaAspSerAlaThrAspPheThr-90  
 94-ValGlnGlySerLysSerGlyLysIleThrLysThrThr-106  
 116-LysValAsnAspAsnLeuThr-122  
 132-GlySerAlaThrGluTyrGluLysAspSerValLeu-143

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146-AsnIleAsnLysLeuGly-151  
 164-LysLeuAsnGluArgHisSerPheGly-172  
 180-ThrSerAlaGluLeuArgLysTyrAla-188  
 194-GluLysAlaLysAlaLeuLysGluThrProProAsnProThrLysAlaAlaGlnIleLysAlaAspGlyHis  
 AlaAspValLysGlySerAspTrpGly-226  
 236-AspIleAsnAspArgAlaArgValGlyValAsnTyrArgSerLysValSerHisThrLeuLysGlyAspAla  
 GluTrpAlaAla-263  
 272-TrpAspAlaAsnLys-276  
 283-ThrProSerGluLysAlaAlaArgValLysIleValThrProGluSer-297  
 304-TyrLysValSerAspLysAlaAspLeu-312  
 317-ThrTrpThrArgHisSerArgPheAspLysAlaGluLeuValPheGluLysGluLysThrIleValAsnGly  
 LysSerAspArgThrThrIle-347

349-ProAsnTrpArgAsnThrTyrLysValGlyPhe-359

361-GlySerTyrGlnIleSerGluLeuGln-370  
 375-IleAlaPheAspLysSerProValArgAsnAlaAspTyrArgMetAsnSerLeuProAspGlyAsn-396  
 407-HisLeuGlyLysAsnHisVal-413  
 424-AsnAspThrSerTyrArgThrAlaLysAlaSerGlyAsnAspValAspSerLysGlyAlaSerSerAlaArg  
 PheLysAsnHisAla-452

#### **Hydrophilic Regions - Hopp-Woods**

43-AlaAlaAlaGluAlaAlaAsp-49  
 51-ThrLysLeuAspSerSerGln-67  
 81-TyrGluAlaAspSerAlaThr-87  
 95-GlnGlySerLysSerGlyLysIleThrLys-104  
 135-ThrGluTyrGluLysAspSerValLeu-143  
 164-LysLeuAsnGluArgHisSer-170  
 180-ThrSerAlaGluLeuArgLysTyrAla-188  
 194-GluLysAlaLysAlaLeuLysGluThrProProAsnProThrLysAlaAlaGlnIleLysAlaAspGlyHis  
 AlaAspValLysGlySerAsp-224  
 237-IleAsnAspArgAlaArgVal-243

247-TyrArgSerLysVal-251

255-LeuLysGlyAspAlaGluTrpAlaAla-263

284-ProSerGluLysAlaArgValLysIleValThr-294  
 305-LysValSerAspLysAlaAspLeu-312  
 322-SerArgPheAspLysAlaGluLeuValPheGluLysGluLysThrIleVal-338  
 340-GlyLysSerAspArgThrThrIle-347  
 375-IleAlaPheAspLysSerProValArgAsnAlaAspTyrArgMet-389

391-SerLeuProAspGlyAsn-396  
 426-ThrSerTyrArgThrAlaLysAlaSerGlyAsnAspValAspSerLysGlyAlaSerSerAlaArgPheLys  
 AsnHisAla-452  
 a990

#### **AMPHI Regions - AMPHI**

76-IleThrAspThrTyrGlyAspAsnLeuLysAspAlaValLysLysGlnLeuGlnAspLeuTyrLys-97  
 131-AspLeuIleAsnLysLeuVal-137  
 151-ThrSerLeuAsnAsnIlePhe-157  
 195-AspIleHisMetLeu-199  
 260-ProGluAsnLeuLysThrLeuAspGly-268  
 293-TyrGluLeuLeuLeuLysGlnCys-300  
 419-SerTyrLeuHisGlyTyrGlyGlyValTyrAlaAlaTrp-432

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442-AlaTyrLeuAspGlyTrpLeuGlnTyr-450  
 472-ThrAlaSerValGluGlyGlyTyrAsnAlaLeu-482  
 550-GlnProPheAlaAlaPheAsnValLeuHisArg-560

**Antigenic Index - Jameson-Wolf**

6-LeuGlySerAsnThrArgSerThrLysIleGlyAspAspAlaAspPheSerAspLysProLysProGlyThr-31  
 35-PheSerSerGlyLysThrAspGlnAsnSerSerGluTyrGlyTyrAspGluIleAsnIleGlnGlyLysAsnTyrAsnSerGlyIle-63  
 75-TyrIleThrAspThrTyrGlyAspAsnLeuLysAspAlaValLysLysGlnLeuGlnAspLeuTyrLysThrArgProGluAlaTrpGluGluAsnLysArgTyrGluGluAlaTyr-114  
 123-SerIleLeuLysGlnLysAsnProAspLeuIle-133  
 145-HisSerAsnThrSerGlnThrSer-152  
 157-PheAsnLysIleLeuHisValLysIleGluAsnLysSerHisVal-171  
 179-ThrLysMetThrLeuLysAspSerLeuTrpGluProArgArgHisSerAspIleHisMet-198  
 200-GluThrSerAspAsnAlaArgIleArgLeuAsnThrLysAspGluLysLeuThrVal-218  
 222-TyrGlnGlyGlyAla-226  
 233-AspValArgGluSerAspLysProAlaLeuThrPheGluGluLysValSerGlyGlnSerGlyValValLeuGluArgArgProGluAsnLeuLysThrLeuAspGlyArgLysLeuIleAlaAlaGluLysAlaAspSerAsnSerPheAlaPheLysGlnAsnTyrArgGlnGlyLeu-292  
 298-LysGlnCysGluGlyGlyPhe-304  
 312-AlaIleProGluAlaGlu-317  
 335-ArgAlaAlaAspArgGlyAspAspValTyrAlaAlaAspProSerArgGlnLysLeu-353  
 358-IleGlyGlyArgSerHisGlnAsnIleArgGlyGlyAlaAlaAlaAspGlyArgArgLysGlyVal-379  
 385-ValPheValArgGlnAsnGluGlySerArgLeuAla-396  
 400-MetGlyGlyArgAlaGlyGln-406  
 408-AlaSerValAsnLysGlyGlyAla-416  
 435-LeuArgAspLysGlnThrGlyAlaTyr-443  
 452-ArgPheLysHisArgIleAsnAspGluAsnArgAlaGluArgTyrLysThrLysGlyTrpThr-472  
 475-ValGluGlyGlyTyr-479  
 487-ValValGlyLysGlyAsnAsnValArg-495  
 510-AsnGlyGlyPheThrAspSerGluGlyThrAla-520  
 525-GlySerGlyGlnTrpGlnSerArgAlaGlyIleArgAlaLysThrArgPheAlaLeuArgAsnGlyValAsn-548  
 559-HisArgSerLysSerPheGlyValGluMetAspGlyGluLysGlnThrLeuAla-576  
 579-ThrAlaLeuGluGlyArgPheGlyIle-587  
 589-AlaGlyTrpLysGlyHisMet-595  
 600-GlyTyrGlyLysArgThrAspGlyAspLysGluAlaAlaLeu-613

**Hydrophilic Regions - Hopp-Woods**

8-SerAsnThrArgSerThrLysIleGlyAspAspAlaAspPheSerAspLysProLysProGlyThr-3  
 1  
 38-GlyLysThrAspGlnAsnSerSer-45  
 79-ThrTyrGlyAspAsnLeuLysAspAlaValLysGlnLeuGlnAsp-94  
 96-TyrLysThrArgProGluAlaTrpGluGluAsnLysLysArgThrGluGluAlaTyr-114  
 123-SerIleLeuLysGlnLysAsnProAspLeuIle-133  
 161-LeuHisValLysIleGluAsnLysSerHisVal-171  
 179-ThrLysMetThrLeuLys-184  
 186-SerLeuTrpGluProArgArgHisSerAsp-195  
 200-GluThrSerAspAsnAlaArgIleArgLeuAsnThrLysAspGluLysLeuThrVal-218  
 233-AspValArgGluSerAspLysProAlaLeuThrPheGluGluLysValSerGly-250  
 255-ValLeuGluArgArgProGluAsnLeuLysThrLeuAspGlyArgLysLeuIleAlaAlaGluLysAlaAspSerAsn-280  
 312-AlaIleProGluAlaGlu-317  
 335-ArgAlaAlaAspArgGlyAspAspValTyrAla-345

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347-AspProSerArgGln-351  
 361-ArgSerHisGlnAsnIleArgGly-368  
 370-AlaAlaAlaAspGlyArgArgLysGlyVal-379  
 385-ValPheValArgGlnAsnGluGlySerArg-394  
 410-ValAsnGlyLysGlyGlyAla-416  
 435-LeuArgAspLysGlnThr-440  
 452-ArgPheLysHisArgIleAsnAspGluAsnArgAlaGluArgTyrLysThr-468  
 487-ValValGlyLysGlyAsnAsn-493  
 513-PheThrAspSerGluGlyThr-519  
 533-AlaGlyIleArgAlaLysThrArgPheAlaLeu-543  
 559-HisArgSerLysSerPheGlyValGluMetAspGlyGluLysGlnThrLeuAla-576  
 579-ThrAlaLeuGluGly-583  
 600-GlyTyrGlyLysArgThrAspGlyAspLysGluAlaAlaLeu-613  
**a990**  
**AMPHI Regions - AMPHI**  
 76-11eThrAspThrTyrGlyAspAsnLeuLysAspAlaValLysLysGlnLeuGlnAspLeuTyrLys-97  
 131-AspLeuIleAsnLysLeuVal-137  
 151-ThrSerLeuAsnAsnIlePhe-157  
 195-AspIleHisMetLeu-199  
 260-ProGluAsnLeuLysThrLeuAspGly-268  
 293-TyrGluLeuLeuLysGlnCys-300  
 419-SerTyrLeuHisGlyTyrGlyGlyValTyrAlaAlaTrp-432  
 442-AlaTyrLeuAspGlyTrpLeuGlnTyr-450  
 472-ThrAlaSerValGluGlyGlyTyrAsnAlaLeu-482  
 550-GlnProPheAlaAlaPheAsnValLeuHisArg-560

**Antigenic Index - Jameson-Wolf**

6-LeuGlySerAsnThrArgSerThrLysIleGlyAspAspAlaAspPheSerPheSerAspLysProGly  
 yThr-31  
 35-PheSerSerGlyLysThrAspGlnAsnSerSerGluTyrGlyTyrAspGluIleAsnIleGlnGlyLysAsnT  
 yrAsnSerGlyIle-63  
 75-TyrIleThrAspThrTyrGlyAspAsnLeuLysAspAlaValLysLysGlnLeuGlnAspLeuTyrLysThrA  
 rgProGluAlaLeTrpGluAlaAsnLysLysArgThrGluGluAlaTyr-114  
 123-SerIleLeuLysGlnLysAsnProAspLeuIle-133  
 145-HisSerAsnThrSerGlnThrSer-152  
 157-PheAsnLysLysLeuHisValLysIleGluAsnLysSerHisVal-171  
 179-ThrLysMetThrLysAspSerLeuTrpGluProArgArgHisSerAspIleHisMet-198  
 200-GluThrSerAspAsnAlaArgIleArgLeuAsnThrLysAspGluLysLeuThrVal-218  
 222-TyrGlnGlyGlyAla-226  
 233-AspValArgSerAspLysProAlaLeuThrPheGluGluLysValSerGlyGlnSerGlyValValLeu  
 GluArgArgProGluAsnLeuLysThrLeuAspGlyArgLysLeuIleAlaAlaGluLysAlaAspSerAsnSerP  
 heAlaPheGlyGlnAsnTyrArgGlnGlyLeu-292  
 298-LysGlnCysGluGlyGlyPhe-304  
 312-AlaIleProGluAlaGlu-317  
 335-ArgAlaAlaAspArgGlyAspAspValTyrAlaAlaAspProSerArgGlnLysLeu-353  
 358-IleGlyGlyArgSerHisGlnAsnIleArgGlyGlyAlaAlaAlaAspGlyArgArgLysGlyVal-379  
 385-ValPheValArgGlnAsnGluGlySerArgLeuAla-396  
 400-MetGlyGlyArgAlaGlyGln-406  
 408-AlaSerValAsnGlyLysGlyGlyAla-416  
 435-LeuArgAspLysGlnThrGlyAlaTyr-443  
 452-ArgPheLysHisArgIleAsnAspGluAsnArgAlaGluArgTyrLysThrLysGlyTrpThr-472  
 475-ValGluGlyGlyTyr-479  
 487-ValValGlyLysGlyAsnAsnValArg-495  
 510-AsnGlyGlyPheThrAspSerGluGlyThrAla-520

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525-GlySerGlyGlnTrpGlnSerArgAlaGlyIleArgAlaLysThrArgPheAlaLeuArgAsnGlyValAsn-548  
 559-HisArgSerLysSerPheGlyValGluMetAspGlyGluLysGlnThrLeuAla-576  
 579-ThrAlaLeuGluGlyArgPheGlyIle-587  
 589-AlaGlyTrpLysGlyHisMet-595  
 600-GlyTyrGlyLysArgThrAspGlyAspLysGluAlaAlaLeu-613

**Hydrophilic Regions - Hopp-Woods**

8-SerAsnThrArgSerThrLysIleGlyAspAspAlaAspPheSerAspLysProLysProGlyThr-31  
 38-GlyLysThrAspGlnAsnSerSer-45  
 79-ThrTyrGlyAspAsnLeuLysAspAlaValLysLysGlnLeuGlnAsp-94  
 96-TyrLysThrArgProGluAlaTrpGluGluAsnLysLysArgThrGluGluAlaTyr-114  
 123-SerIleLeuLysGlnLysAsnProAspLeuIle-133  
 161-LeuHisValLysIleGluAsnLysSerHisVal-171  
 179-ThrLysMetThrLeuLys-184  
 186-SerLeuTrpGluProArgArgHisSerAsp-195  
 200-GluThrSerAspAsnAlaArgIleArgLeuAsnThrLysAspGluLysLeuThrVal-218  
 233-AspValArgGluSerAspLysProAlaLeuThrPheGluGluLysValSerGly-250  
 255-ValLeuGluArgArgProGluAsnLeuLysThrLeuAspGlyArgLysLeuIleAlaAlaGluLysAlaAsp  
 SerAsn-280  
 312-AlaIleProGluAlaGlu-317  
 335-ArgAlaAlaAspArgGlyAspAspValTyrAla-345  
 347-AspProSerArgGln-351  
 361-ArgSerHisGlnAsnIleArgGly-368  
 370-AlaAlaAlaAspGlyArgArgLysGlyVal-379  
 385-ValPheValArgGlnAsnGluGlySerArg-394  
 410-ValAsnGlyLysGlyGlyAla-416  
 435-LeuArgAspLysGlnThr-440  
 452-ArgPheLysHisArgIleAsnAspGluAsnArgAlaGluArgTyrLysThr-468  
 487-ValValGlyLysGlyAsnAsn-493  
 513-PheThrAspSerGluGlyThr-519  
 533-AlaGlyIleArgAlaLysThrArgPheAlaLeu-543  
 559-HisArgSerLysSerPheGlyValGluMetAspGlyGluLysGlnThrLeuAla-576  
 579-ThrAlaLeuGluGly-583  
 600-GlyTyrGlyLysArgThrAspGlyAspLysGluAlaAlaLeu-613  
**a992**

**AMPHI Regions - AMPHI**

6-ArgHisLeuLysAsnMetGlnIleLysLysIleMetLysTrp-19  
 24-LeuSerLeuLeuGlyAlaLeuGlyTyr-32  
 45-AlaValLeuAspValLeuGlyAlaAla-53  
 72-HisArgTyrThrGlyThrValSerLysValTyr-82  
 158-GlnValGlnAspGly-162  
 179-AspPheAlaAspTyr-183

**Antigenic Index - Jameson-Wolf**

1-MetPheArgArgHisArgHisLeuLys-9  
 34-GlyTyrGlySerGluAlaValArg-41  
 52-AlaAlaGlyAspAlaGlySerAspAlaProAlaArgArgArgAlaSerAlaLysSerGlyHisArgTyrThr-75  
 79-SerLysValTyrAspGlyAspThr-86  
 90-IleAspGlyAspGlyAlaLysHisLysIle-99  
 105-AspAlaProGluMetLysGlnAlaTyrGlyThrArgSerArgAspAsnLeuArgAlaAlaGluGlyArg  
 LysValSer-131  
 134-ValPheAspThrAspArgTyrGlnArgGluValAla-145

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148-SerValGlyLysThrAspLeuAsn-155

168-LysSerTyrAlaLysGluGlnGlnAspLysAlaAspPhe-180

187-GlnIleGlnAlaGluArgGluArgLysGlyLeuTrpLysAlaLysAsnProGlnAlaPro-206

208-AlaTyrArgArgAlaGlyArgSerGlyGlyAsnLysAspTrpMetAsp-224

**Hydrophilic Regions - Hopp-Woods**

1-MetPheArgArgHisArgHisLeuLys-9

54-GlyAspAlaGlySerAspAlaProAlaArgArgArgAlaSerAlaLysSerGlyHisArg-73

90-IleAspGlyAspGlyAlaLysHisLysIle-99

105-AspAlaProGluMetLysGln-111

113-TyrGlyThrArgSerArgAspAsnLeuArgAlaAlaAlaGluGlyArgLysValSer-131

134-ValPheAspThrAspArgTyrGlnArgGluValAla-145

148-SerValGlyLysThrAspLeu-154

169-SerTyrAlaLysGluGlnGlnAspLysAlaAspPhe-180

187-GlnIleGlnAlaGluArgGluArgLysGlyLeuTrpLysAlaLysAsnPro-203

211-ArgAlaGlyArgSerGlyGlyAsnLysAspTrpMet-223

a993

**AMPHI Regions - AMPHI**

6-SerSerPheGlnGlyProLeuAspLeuLeuLeu-16

35-ThrGluGlnTyrLeuHisTyrIleAlaGlnIle-45

105-GlyLeuAspAlaLeuProArgAla-112

136-IleThrAspLeuThrGlnAlaTrpLeuSer-145

152-HisThrArgSerHisGluValIle-159

169-MetThrAlaIleLeuArgArgLeuAsnLysHisGlyIleCysArgPheHisAspLeuPheAsnProGlu-19

1

199-ValAsnPheIleAlaLeuLeu-205

**Antigenic Index - Jameson-Wolf**

7-SerPheGlnGlyProLeu-12

20-ArgLysGlnAsnIleAsp-25

70-LeuLeuLeuProArgThrGluThrValGluAspGluGluAlaAspProArgAlaGluLeuValArg-91

108-AlaLeuProArgAlaGlyArgAspPhe-116

148-SerArgAlaLysHisThrArgSerHisGluValIleLysGluThrIleSer-164

174-ArgArgLeuAsnLysHisGlyIle-181

188-PheAsnProGluGlnGlyLeu-193

207-LeuAlaLysGluGlyLeu-212

228-LeuAsnHisGluGlyAlaHisSerAspGlyIleSerGlyThrArgGlyArgAspValPhe-248

**Hydrophilic Regions - Hopp-Woods**

20-ArgLysGlnAsnIleAsp-25

70-LeuLeuLeuProArgThrGluThrValGluAspGluGluAlaAspProArgAlaGluLeuValArg-91

108-AlaLeuProArgAlaGlyArg-114

148-SerArgAlaLysHisThrArgSerHisGluValIleLysGluThrIleSer-164

174-ArgArgLeuAsnLys-178

207-LeuAlaLysGluGlyLeu-212

232-GlyAlaHisSerAspGlyIleSerGlyThrArgGlyGlyArgAspValPhe-248

a996

**AMPHI Regions - AMPHI**

21-LysSerAlaArgThrHisAlaLysIlePro-30

50-ProGlyGluSerTyrProAlaGlnLeuGlnLysLeuThrGlyTrpAsn-65

75-ThrSerAlaGlnAlaLeuSerArgLeuProAla-85

104-LeuArgLysValProLysGlu-110

115-AsnIleAlaLysIleIleGluThrValGlnLys-125

140-LeuGlyAlaLeuPheGlyHisLeuSerAsp-149

167-GlyAlaTrpAlaGlu-171

186-AsnGlyLysGlyTyrArgLysPheAlaGluAspLeuAsnGlnPheLeuArgLysGlnGlyPhe-206

**Antigenic Index - Jameson-Wolf**

1-MetAsnArgArgThrPhe-6  
 18-CysGlyArgLysSerAlaArgThrHisAlaLysIleProGluGlySerThr-34  
 46-TyrGlyAlaAsnProGlyGluSerTyrPro-55  
 69-GlyGlyValSerGlyAspThrSerAla-77  
 87-LeuAlaArgLysProLys-92  
 99-GlyGlyAsnAspPheLeuArgLysValProLysGluGlnThrArgAlaAsnIle-116  
 121-GluThrValGlnLysGluAsnIlePro-129  
 148-SerAspHisProLeuTyrGluAspLeuSerGluGluTyrGly-161  
 173-LeuGlyAspAsnAsnLeuLysSerAspGlnIleHisAlaAsnGlyLysGlyTyrArgLysPheAlaGluAspLeuAsnGlnPheLeuArgLysGlnGlyPheArg-207

**Hydrophilic Regions - Hopp-Woods**

18-CysGlyArgLysSerAlaArgThrHisAlaLysIleProGlu-31  
 49-AsnProGlyGluSerTyr-54  
 71-ValSerGlyAspThrSerAla-77  
 87-LeuAlaArgLysProLys-92  
 102-AspPheLeuArgLysValProLysGluGlnThrArgAlaAsnIle-116  
 121-GluThrValGlnLysGluAsnIle-128  
 154-GluAspLeuSerGluGluTyrGly-161  
 176-AsnAsnLeuLysSerAspGlnIleHisAlaAsn-186  
 188-LysGlyTyrArgLysPheAlaGluAspLeuAsnGlnPheLeuArg-202  
**a997**

**AMPHI Regions - AMPHI**

18-TrpAlaGlyLeuSerAlaAlaVal-25  
 70-TyrArgGlyValLeuArgLeuMetLysThrIleGlySerAsp-83  
 107-ProLeuProAlaProLeuHisIle-114  
 123-ArgValProSerAlaPheLysAlaLysLeuLeuAlaAspMetSerAspLeuGlnLysSerAlaArgLeuGly-146  
 164-AlaAlaValMetGlnPheTrpGlnProLeuValTrpGly-176  
 189-ValLeuCysAsnValLeuSerAsp-196  
 222-AlaLeuAlaGluLeuGlnArg-228  
 241-ArgLeuAsnThrLeuPro-246  
 275-GluGlyThrProGluHisValGlnThrAla-284  
 300-TyrAlaGluProValArgLeuProAlaProLeuThrGlyLeuAlaAspGly-316  
 354-AspLysValHisAlaAspLeuLysArgIleLeuProHisLeu-367  
 369-GluProGluAlaVal-373

**Antigenic Index - Jameson-Wolf**

3-AsnThrProHisProArgProLysIle-11  
 37-GluAlaGlyArgGlnAlaGlyGlyArgAlaArgAla-48  
 50-AlaGlyAsnThrAspGlyPheGly-57  
 78-LysThrIleGlySerAspProHisAla-86  
 122-ArgArgValProSerAlaPheLys-129  
 132-LeuLeuAlaAspMetSerAspLeuGlnLysSerAlaArgLeuGlyGlnProAspThrThr-151  
 156-LeuLysGlnArgAsnValProArg-163  
 180-ThrProLeuGluThrAlaSer-186  
 197-GlyValLeuThrLysLysSerGlySerAspTyrLeuLeuProLysGlnAspLeu-214  
 225-GluLeuGlnArgLeuGlyAlaAspIleArgLeuGluThrArgIleCysArg-241  
 243-AsnThrLeuProAspGlyLysVal-250  
 273-LeuProGluGlyThrProGluHisVal-281  
 312-GlyLeuAlaAspGlyThr-317  
 323-CysArgGlyArgLeuGlyLeuProGluAsnGluVal-334

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340-ValSerAspArgValGlyAla-346  
 356-ValIleAlaAspLeuLysArgIleLeu-364  
 367-LeuGlyGluProGluAlaValArgValIleThrGluLysArgAlaThrThrAlaAlaAspAlaProProPro  
 AspLeu-392  
 402-ProAlaGlyAspTyrLeuHisProAspTyrProAla-413

**Hydrophilic Regions - Hopp-Woods**

5-ProHisProArgProLysIle-11  
 37-GluAlaGlyArgGlnAlaGlyGlyArgAlaArgAla-48  
 80-IleGlySerAspPro-84  
 122-ArgArgValProSer-126  
 132-LeuLeuAlaAspMetSerAspLeuGlnLysSerAlaArgLeuGlyGlnProAspThrThr-151  
 198-ValLeuThrLysLysSerGlySer-205  
 208-LeuLeuProLysClnAspLeu-214  
 225-GluLeuGlnArgLeuGlyAlaAspIleArgLeuGluThrArgIleCysArg-241  
 246-ProAspGlyLysVal-250  
 276-GlyThrProGluHisVal-281  
 325-GlyArgLeuGlyLeuProGluAsnGluVal-334  
 340-ValSerAspArgValGly-345  
 356-ValIleAlaAspLeuLysArgIleLeu-364  
 368-GlyGluProGluAlaValArgValIleThrGluLysArgAlaThrThrAlaAlaAspAlaProProPro-390

**g001****AMPHI Regions - AMPHI**

7-AlaAlaArgArgValSer-12  
 17-SerGlyArgAlaCys-21  
 67-AlaArgPhePheGlySerValCysAsnSerAla-77

**Antigenic Index - Jameson-Wolf**

3-ProGlnGlyLysAlaAlaAlaArgArgValSerAlaAsnGluValSerGlyArgAlaCysAla-22  
 31-ThrLeuProLysArgAspThrLeuAsnGlySerGlyThr-43  
 53-ProArgSerLeuArgSerLysSerThr-61  
 68-ArpGphePheGlySer-72  
 74-CysAsnSerAlaAlaArgArgSerSerCysProSerProLysIleGly-89  
 100-ValProSerGluAlaMetLeuArgLysSerSerGlyGluLysHisSerVal-116  
 119-AspCysProAlaSerSerGlyArgTrpAspAsnThrAla-131

**Hydrophilic Regions - Hopp-Woods**

5-GlyLysAlaAlaArgArgValSerAlaAsnGluValSerGly-18  
 32-LeuProLysArgAspThrLeuAsn-39  
 54-ArgSerLeuArgSerLysSer-60  
 77-AlaAlaArgArgSerSerCysProSerProLys-87  
 104-AlaMetLeuArgLysSerSerGlyGluLysHisSerVal-116  
 125-GlyArgTrpAspAsn-129

**g003****AMPHI Regions - AMPHI**

72-AsnGlnValValLeu-76  
 82-ValValGluValPheClnArg-88  
 150-ValGlnAlaGluPheValGlyIleValGlyHisPheAspGlyLeuGlyMet-166  
 173-HisPhePheValArgValPheArg-180

**Antigenic Index - Jameson-Wolf**

104-PheGluGlyGlyAspAspGlyPhe-112

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137-GlyArgIleAsnAspAlaGluIleIle-145  
 204-ProLysAlaAlaAlaGlyGluValAsnGly-213  
 215-ArgValHisAspCys-219

**Hydrophilic Regions - Hopp-Woods**

106-GlyGlyGlyAspAspGlyPhe-112  
 137-GlyArgIleAsnAspAlaGluIleIle-145  
 205-LysAlaAlaAlaGlyGluValAsnGly-213  
 215-ArgValHisAspCys-219

g005

**AMPHI Regions - AMPHI**

16-IleGlnSerMetTrpLysGlu-22  
 32-LeuGluLeuLeuThrValPheGlyAlaIleAla-42  
 62-LeuThrAspPheSerGluAsnTyr-69  
 107-ArgLeuLysGluGlyGluLysSerAlaGlu-117  
 177-GlnLeuArgArgLeuArg-182  
 213-AlaProPheAlaValIleGlySerValGlyValValAlaGluValProAsnIleHisArgLeuLeuLysLys-236  
 249-PheLysArgThrVal-253  
 274-ThrHisGlnLeuPheLysGln-280  
 308-LeuAsnLeuIleAspGluIleSerThr-316  
 320-LeuLeuLeuLysAlaPhe-325

**Antigenic Index - Jameson-Wolf**

1-MetGlyMetAspAsn-5  
 10-MetProGluGlnGluGluIleGlnSerMetTrp-20  
 50-GlnSerLysLysGlnSerGluSerGlySer-59  
 64-AspPheSerGluAsnTyrLysGlnArgGlnSerPhe-76  
 82-SerGluGluGluThrLysHisGlnGluLysLysGluLysLysGluLysAlaGluAlaLysAlaGluLysLysLysArgLeuLysGluGlyGlyGluLysSerAlaGluThrGlnLysSerArg-122  
 138-GluSerLeuArgHisGluIle-144  
 151-AlaLysProGluAspGluValLeuLeu-159  
 161-LeucluUserProGlyGlyVal-167  
 177-GlnLeuArgArgLeuArgGluArgAsnIle-186  
 191-AlaValAspLysValAlaAla-197  
 232-ArgLeuLeuLysLysHisAspIleAspVal-241

247-GlyGluPheLysArgThr-252

258-GluAsnThrGluLysGlyLysGlnPheArgGlnGluLeuGluGluThrHisGln-276  
 281-PheValSerGluAsnArgProGlyLeuAspIleGluLysIleAlaThr-296  
 312-AspGluIleSerThrSerAspAspLeuLeu-321  
 325-PheGluAsnLysGlnValIle-331  
 334-LysTyrGlnGluLysArgSerLeuIle-342  
 351-AlaSerValGluLysLeuPhe-357  
 361-ValAsnArgArgAlaAspVal-367

**Hydrophilic Regions - Hopp-Woods**

10-MetProGluGlnGluGluIleGlnSerMetTrp-20  
 50-GlnSerLysLysGlnSerGluSerGly-58  
 64-AspPheSerGluAsnTyrLysGlnArgGlnSerPhe-76  
 82-SerGluGluGluThrLysHisGlnGluLysLysGluLysLysGluLysAlaGluAlaLysAlaGluLysLysArgLeuLysGluGlyGlyGluLysSerAlaGluThrGlnLysSerArg-122  
 138-GluSerLeuArgHisGluIle-144

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151-AlaLysProGluAspGluValLeuLeu-159

161-LeuGluSerProGly-165  
 177-GlnLeuArgArgLeuArgGluArgAsnIle-186  
 191-AlaValAspLysValAlaAla-197  
 232-ArgLeuLeuLysLysHisAspIleAspVal-241  
 247-GlyGluPheLysArg-251  
 258-GluAsnThrGluLysGlyLysGlnLysPheArgGlnGluLeuGluThrHisGln-276  
 281-PheValSerGluAsnArgProGlyLeuAspIleGluLysIleAlaThr-296  
 312-AspGluIleSerThrSerAspAspIleLeu-321  
 325-PheGluAsnLysGlnValIle-331  
 334-LysTyrGlnGluLysArgSerLeuIle-342  
 351-AlaSerValGluLysLeuPhe-357  
 361-ValAsnArgArgAlaAspVal-367

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**AMPHI Regions - AMPHI**  
 6-LysHisIleAlaLysThrHisArgLysArg-15  
 19-ThrPheSerProValGlyLeuGluAsnLeuLeu-29  
 48-ArgValTrpGlnAlaLeuLeuTyrAlaLeuValValPhe-60  
 69-ArgArgIleAlaAspThrArgThrPheThrArgIleTyrThrGlu-83  
 111-GluPheValSerPheGlu-117  
 125-ThrSerValValSerIlePheGlyIlaCysIleMetLeuLeu-138  
 195-HisTyrGlyLeuValSerArgLeu-202  
 236-GlyTyrGlySerAlaGlyHisIleTyrSer-245  
 257-LeuAspAspValProArgLeuValGluGlnTyrSerAsnLeuLysAspIle-273

**Antigenic Index - Jameson-Wolf**

6-LysHisIleAlaLysThrHisArgLysArgLeu-16  
 67-AlaAlaArgArgIleAlaAspThrArgThrPheThr-78  
 90-LeuGluGlnArgGlnArgGlnValProHisSer-100  
 173-LeuAsnAsnSerLeuArgAspAsnHisPheIleArgLysGlyAspGluArgGlnLeuTyr-193  
 206-IleSerAsnArgGluAlaPhe-212  
 256-SerLeuAspAspValProArgLeuValGluGlnTyrSerAsnLeuLysAspIleGlyGlnArgIleGluTrp  
 SerGluArgAsnIleLysAlaGlyThr-288

**Hydrophilic Regions - Hopp-Woods**

6-LysHisIleAlaLysThrHisArgLysArgLeu-16  
 67-AlaAlaArgArgIleAlaAspThrArgThrPhe-77  
 90-LeuGluGlnArgGlnArgGlnValPro-98  
 175-AsnSerLeuGluArgAspAsnHisPheIleArgLysGlyAspGluArgGlnLeu-192  
 206-IleSerAsnArgGluAla-211  
 256-SerLeuAspAspValProArgLeuValGlu-265  
 268-SerAsnLeuLysAspIleGlyGln-275  
 277-IleGluTrpSerGluArgAsnIleLysAlaGlyThr-288

**g007-1**

**AMPHI Regions - AMPHI**  
 71-HisSerMetValLysGlyIleAsn-78  
 105-ValAlaThrTyrIleMetAsnAlaPheAspAsnGlyGlyGly-118

**Antigenic Index - Jameson-Wolf**

1-MetAsnThrThrArgLeuProThr-8  
 20-SerAlaAlaAspAsnSerIleMetThrLysGlyGlnLysValTyrGluSerAsnCys-38  
 41-CysHisGlyLysLysGlyGluGlyArgGlyThrAlaPhePro-54  
 56-LeuPheArgSerAspTyrIleMetAsnLysPro-66  
 81-IleLysValAsnGlyLysThrTyrAsnGly-90

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98-SerAspAlaAspIle-102  
 112-AlaPheAspAsnGlyGlySerValThrGluLysAspValLysGlnAlaLysGlyLysLysAsn-133

**Hydrophilic Regions - Hopp-Woods**

26-IleMetThrLysGlyGlnLysValTyrGlu-35  
 42-HisGlyLysLysGlyGluGlyArgGly-50  
 98-SerAspAlaAspIle-102  
 119-SerValThrGluLysAspValLysGlnAlaLysGlyLysLyAsn-133  
**g008**  
**AMPHI Regions - AMPHI**  
 15-LeuAspAsnProAlaGlnGlnIleArgGlyAlaLeuAspAlaLeuSer-30  
 54-GlnProAspPheIleAsnAlaVal-61  
 63-ThrValSerThrThr-67  
 69-AspGlyIleAlaLeuLeuAlaGluLeuAsnArg-79  
 90-PheArgAsnAlaPro-94  
 129-ArgProLeuAlaGluIleLeuProAsp-137  
 140-LeuGlyLysTyrGlyLysValValGluLeuSerLysArgLeuGly-154

**Antigenic Index - Jameson-Wolf**

1-MetAsnAsnArgHis-5  
 12-GlySerAsnLeuAspAsnProAlaGlnGlnIleArgGlyAlaLeu-26  
 29-LeuSerSerHisProAspIleArgLeuGluGln-39  
 49-ValGlyTyrAspAsnGlnPrAspPhe-57  
 76-GluLeuAsnArgIleGluAlaAspPheGlyArgGluArgSerPheArgAsnAlaProArgThrLeuAspLeuA  
 spIleIleAspPheAspGlyIleSerSerAspAspProArgLeuThrLeuProHisProArgAlaHisGluArgSe  
 rPheVal-127  
 139-IleLeuGlyLysTyrGlyLysValValGluLeuSerLysArgLeuGlyAsnGlnGlyIle-158  
 160-LeuLeuProAspArg-164

**Hydrophilic Regions - Hopp-Woods**

14-AsnLeuAspAsnProAlaGlnGlnIle-22  
 33-ProAspIleArgLeuGluGln-39  
 76-GluLeuAsnArgIleGluAlaAspPheGlyArgGluArgSerPheArgAsnAlaProArgThrLeuAsp-98  
 105-AspGlyIleSerSerAspAspProArgLeu-114  
 120-ArgAlaHisGluArgSerPheVal-127  
 147-ValGluLeuSerLysArgLeuGly-154  
 160-LeuLeuProAspArg-164  
**g009**  
**Antigenic Index - Jameson-Wolf**  
 6-ValAlaPheGluArgHisHisLysSerLysAlaGluGlnAsnThrHisArgArgAlaAspAlaGluIleAl  
 aGlu-31  
 37-AsnGlnHisThrGlnAlaArgAsnGlnSerVal-47  
 57-PheSerAspLysVal-61  
 77-AlaAspGlyGlyLysThrTrpGlnLysPro-86

**Hydrophilic Regions - Hopp-Woods**

6-ValAlaPheGluArgHisHisLysSerLysAlaGluGlnAsnThrHisArgArgAlaAspAlaGluIleAl  
 aGlu-31  
 40-ThrGlnAlaArgAsnGlnSer-46  
 78-AspGlyGlyLysThrTrpGln-84  
**g010-1**  
**AMPHI Regions - AMPHI**  
 54-SerAlaSerLeuGly-58  
 70-TyrAspThrValLysGly-75  
 115-TyrGlnArgProPheGlyGlyHis-122

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125-GluHisGlyLysArgAlaVal-131  
 146-LeuHisThrLeuTyrGln-151  
 210-AlaSerSerThrAsn-214

216-TyrMetAsnThrGlyAspGly-222  
 275-ArgTyrAlaProThrValLys-281  
 322-IleMetGluLysLeuProGlyIleArg-330  
 338-GlyIleAspProIleLysAspProIlePro-347  
 357-GlyGlyIleProThrAsnTyrHis-364

**Antigenic Index - Jameson-Wolf**

15-GlyGlyGlyAlaGly-19  
 26-LeuSerLysSerGlyLeu-31  
 40-PheProThrArgSerHis-45  
 59-AsnValGlnGluAspArgTrpAsp-66  
 71-AspThrValLysGlySerAspTrpLeuGlyAspGlnAspAlaIle-85  
 104-MetProPheAspArgValGluSerGlyLysIleTyrGlnArgProPheGly-120  
 123-ThrAlaGluHisGlyLysArgAlaValGluArgAlaCysAlaValAlaAspArgThrGly-142  
 152-GlnAsnValArgAlaAsnThr-158

168-AspLeuIleArgAspGluAsnGlyAspVal-177  
 183-MetGluMetGluThrGlyGlu-189  
 202-ThrGlyGlyGlyArgIle-208  
 218-AsnThrGlyAspGly-222  
 231-IleProLeuGluAspMetGlu-237  
 255-GluGlyValArgGlyGluGlyIle-263  
 266-AsnAlaAspGlyGluArgPheMetGlu-274

276-TyrAlaProThrValLysAspLeuAlaSerArgAspValValSer-290  
 297-IleTyrGluGlyArgGlyCysGlyLysAsnLysAspHisVal-310  
 315-AspHisIleGlyAlaGluIleMetGluLysLeuProGlyIleArgGluIleSer-333  
 338-GlyIleAspProIleLysAspProIle-346  
 368-ValValProGlnGlyAspGluTyrGluValProVal-379  
 395-GlyAlaAsnArgLeuGlyThrAsnSerLeu-404  
 411-ArgProThrProArg-415

**Hydrophilic Regions - Hopp-Woods**

27-SerLysSerGlyLeu-31  
 59-AsnValGlnGluAspArgTrpAsp-66  
 71-AspThrValLysGly-75

77-AspTrpLeuGlyAspGlnAspAlaIle-85  
 105-ProPheAspArgValGluSerGlyLysIleTyr-115  
 123-ThrAlaGluHisGlyLysArgAlaValGluArgAlaCysAlaValAlaAspArgThrGly-142  
 168-AspLeuIleArgAspGluAsnGlyAsp-176  
 183-MetGluMetGluThrGlyGlu-189  
 231-IleProLeuGluAspMetGlu-237  
 255-GluGlyValArgGlyGluGly-261  
 267-AlaAspGlyGluArgPheMetGlu-274  
 276-TyrAlaProThrValLysAspLeuAlaSerArgAspValValSer-290  
 297-IleTyrGluGlyArgGlyCysGlyLysAsnLysAspHisVal-310  
 315-AspHisIleGlyAlaGluIleMetGluLysLeuProGlyIleArgGluIleSer-333  
 340-AspProIleLysAspProIle-346  
 371-GlnGlyAspGluTyrGluValProVal-379

g011

**AMPHI Regions - AMPHI**

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58-IleArgLeuIleAsnAlaAla-64  
 83-AlaIleLeuThrLys-87  
 116-AspValLeuHisArgTyrLeuProGlnMetLeuSerAlaGly-129  
 142-ThrGlyAlaAlaGlyMetAlaAspMetGlyLysValMet-154

**Antigenic Index** - Jameson-Wolf  
 1-MetLysThrHisArgLysThrCysSer-9  
 17-ThrAlaSerLysProAlaValSerIleArgHisProSerGluAspIleMetSerLeuLysThrArgLeuThrGluAspMetLysThrAlaMetArgAlaLysAspGlnVal-53  
 66-LysGlnPheGluValAspGluArgThrGluAlaAspAspAlaLysIle-81  
 88-MetValLysGlnArgLysAspGlyAlaLysIleTyrThrGluAlaGlyArgGlnAspLeuAlaAspLysGluAsnAlaGluIle-115  
 127-SerAlaGlyGluIleArgThrAlaVal-135  
 159-ThrArgLeuAlaGlyLysAlaAspMetGlyGluValAsnLysIleLeu-174

**Hydrophilic Regions** - Hopp-Woods  
 1-MetLysThrHisArgLysThrCys-8  
 27-HisProSerGluAspIleMetSerLeuLysThrArgLeuThrGluAspMetLysThrAlaMetArgAlaLysAspGlnVal-53  
 66-LysGlnPheGluValAspGluArgThrGluAlaAspAspAlaLysIle-81  
 88-MetValLysGlnArgLysAspGlyAlaLysIleTyrThrGluAlaGlyArgGlnAspLeuAlaAspLysGluAsnAlaGluIle-115  
 129-GlyGluIleArgThrAlaVal-135  
 159-ThrArgLeuAlaGlyLysAlaAspMetGlyGluValAsnLysIleLeu-174  
**g012-1**

**AMPHI Regions** - AMPHI  
 18-AspLysLeuLeuGluGlnLeuMetArgPheLeuGlnPheLeuProGluPheLeuPheAlaLeuPheArgIle-41  
 48-ArgAlaLeuLysPheAlaArgArg-55  
 89-AsnAsnPheIleArgHisThr-95  
 100-AlaAlaAlaCysArgAsp-105  
 133-HisAlaAlaArgThrPhe-138  
 160-GlnGlyPheTyrGlyVal-165  
 179-GlyPheLeuArgPheGlyArgPheLeuProAlaLeuLeuGlnThrLeu-194

**Antigenic Index** - Jameson-Wolf  
 42-PheThrHisLysSerAsnArgAlaLeuLysPheAlaArgArgHisHis-57  
 72-ArgHisPheArgHisHisThrHisArgThrAspAspArgLysArgSerGlyAsnAsnPheIleArgHisThrArg-96  
 102-AlaCysArgAspIleLeuAspGlyGlnArgAsn-114  
 119-GlnThrProLysLeuArgSerArgGln-127  
 137-ThrPheGlnSerGluGlnAsnLeu-144  
 147-ArgLeuGlyAsnGlnLysHisArgArgAsnLeuMetThrGln-160  
 173-IleGlnHisLysLysAlaGly-179

**Hydrophilic Regions** - Hopp-Woods  
 45-LysSerAsnArgAlaLeuLysPheAlaArgArgHisHis-57  
 77-HisThrHisArgThrAspAspArgLysArgSerGly-88  
 102-AlaCysArgAspIleLeuAspGlyAspGlyGlnArg-113  
 121-ProLysLeuArgSerArgGln-127  
 149-GlyAsnGlnLysHisArgArgAsnLeu-157  
 173-IleGlnHisLysLysAlaGly-179  
**g015**

**AMPHI Regions** - AMPHI  
 36-LeuValGlyPheTrpLysAlaLeuProHis-45

107-MetCysCysIleAlaCys-112

**Antigenic Index** - Jameson-Wolf  
 29-TrpLysAsnProGluLysProLeu-36  
 90-MetArgAlaArgProArgSerThrLys-98

**Hydrophilic Regions** - Hopp-Woods  
 31-AsnProGluLysProLeu-36  
 90-MetArgAlaArgProArgSerThrLys-98  
 g018-2

**AMPHI Regions** - AMPHI  
 6-IleGlnHisLeuArg-10  
 15-HisLeuMetArgProCysGlnGlnValSerGlnMetPheGly-28  
 152-ArgIleGlyAsnGlyTyr-157

**Antigenic Index** - Jameson-Wolf  
 1-MetValGluArgHisIleGln-7  
 9-LeuArgAsnGlyHisLeu-14  
 27-PheGlyGlyArgAlaTyrAspPheArgAlaAspLysAlaAlaGly-41  
 67-TyrPheAlaAspAspLysPhe-73  
 78-LeuArgGlyAsnLeuArg-83  
 85-PheGlnThrAspLysAlaAspLeuArgThrGlyLysHisHisAlaAsnGly-101  
 108-AlaAspIleArgValAlaAla-114  
 136-ArgValAlaArgAsnLysAspMetArgAsnAlaGlyLeuHis-149  
 152-ArgIleGlyAsnGlyTyr-157  
 176-ArgThrAlaThrTyr-180  
 223-SerGluHisGlyPheArg-228

**Hydrophilic Regions** - Hopp-Woods  
 1-MetValGluArgHisIleGln-7  
 30-ArgAlaTyrAspPheArgAlaAspLysAlaAla-40  
 67-TyrPheAlaAspAspLysPhe-73  
 85-PheGlnThrAspLysAlaAspLeuArgThrGlyLysHisHisAla-99  
 108-AlaAspIleArgValAlaAla-114  
 136-ArgValAlaArgAsnLysAspMetArgAsn-145  
 g019-2

**AMPHI Regions** - AMPHI  
 33-ProAlaAspAsnIleGlu-38  
 55-GlyLysThrLeuAlaAspTyrGlyGlyTyrProSerAlaLeuAspAlaValLysGln-73  
 83-LeuGluAsnThrGlyAsp-88

90-AlaMetAlaGluAsnValArgLysGluTrpLeuLysSer-102  
 142-AlaAlaGluLeuValXxxAsnThrGlyLysLeuProSerGlyCysThrLysLeuLeuGluGlnAla-163  
 173-AspAlaTrpArgGlyValArgGlyLeu-181  
 195-AlaAlaLeuGlySerProPheAspGlyGlyThrGlnGly-207  
 215-AsnValIleGlyLysGluAlaArgLysSer-224  
 229-AlaLeuLeuSerGluMetGlu-235  
 259-AsnValProAlaAlaLeuAspTyrTyrGly-268  
 292-ArgArgTrpAspGluLeuAlaSerValIleSerHisMetProGluLysLeuGlnLys-310  
 329-GlnGluAlaGluLysLeuTyrLysGlnAla-338  
 451-ArgTyrIleSerPro-455  
 495-GlnGlyLeuMetGlnValMet-501

582-ArgAspTyrValLysLysValMet-589

**Antigenic Index - Jameson-Wolf**  
**22-SerSerThrAsnThr-26**

28-ProAlaGlyLysThrProAlaAspAsnIleGluThrAlaAspLeuSerAlaSerValProThrArgProAlaG  
 luProGluGlyLysThrLeuAlaAspTyrGlyGlyTyrProSerAla-67  
 69-AspAlaValLysGlnAsnAsnAspAlaAla-78  
 84-GluAsnThrGlyAspSerAlaMet-91

93-GluAsnValArgLysGluTrpLeu-100  
 103-LeuAlaGlyArgProThrAspGlyArgAsn-108  
 115-GluTyrAlaLysLeuLysProGluGlyGlyAlaGlnGluValGluCysTyrAlaAspSerSerArgAsnAsp  
 TyrThrArgAlaAlaGlu-144  
 147-XxxAsnThrGlyLysLeuProSerGlyCys-156

170-GlyGlyAsnAspAlaTrpArgGlyValArg-179  
 182-LeuAlaGlyArgProThrThrAspGlyArgAsn-192  
 199-SerProPheAspGlyGlyThrGlnGlySerArgGluTyr-211  
 217-IleGlyLysGluAlaArgLysSerProAsnAla-227  
 232-SerGluMetGluSerGlyLeuSerProGluGlnArgSer-244  
 254-GlnSerGlnSerLeu-258  
 266-TyrTyrGlyLysValAlaAspArgArgGlnLeuThrAspAspGlnIle-281  
 287-AlaAlaLeuArgAlaArgArgTrpAspGlu-296

304-MetProGluLysLeuGlnLysSerProThr-313  
 320-ArgSerArgAlaAlaThrGlyAsnThrGlnGluAlaGluLysLeuTyrLys-336  
 339-AlaAlaThrGlyArgAsn-344  
 350-AlaGlyGluGluLeuGlyArgLysIleAspThrArgAsnAsnValProAspAlaGlyLysAsnSerVal-37  
 2

374-ArgMetAlaGluAspGlyAlaIleLys-382  
 389-ArgAsnSerArgThrAlaGlyAspAlaLysMetArgArgGlnAlaGlnAla-405  
 409-PheAlaThrArgGlyPheAspGluAspLysLeuLeu-420  
 438-SerAlaGluArgThrAspArgLysLeuAsnTyr-448  
 454-SerProHelysAspThrValIle-461  
 464-AlaGlnAsnValAsnValAspProAla-472  
 478-IleArgGlnGluSerArgPhe-484  
 488-AlaGlnSerArgValGlyAla-494  
 504-ThrAlaArgGluIleAlaGly-510

520-TyrThrAlaAspGlyAsnIleArgMetGly-529  
 535-AspThrLysArgArgLeuGlnAsnAsnGluIle-545  
 550-GlyTyrAsnAlaGlyProGlyArgAlaArgArgTrpGlnAlaAspThrProLeuGlu-568  
 579-SerGluThrArgAspTyrValLys-586

605-ProLeuLysGlnArgMetGlyThrValProAlaArg-616

**Hydrophilic Regions - Hopp-Woods**  
 30-GlyLysThrProAlaAspAsnIleGluThrAlaAspLeu-42  
 46-ValProThrArgProAlaGluProGluGlyLysThrLeuAla-59  
 69-AspAlaValLysGlnAsnAsnAspAlaAla-78  
 85-AenThrGlyAspSerAlaMet-91

93-GluAsnValArgLysGluTrpLeu-100

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103-LeuGlyAlaArgArgGln-108  
 115-GluTyrAlaLysLeuLysProGluGlyGlyAlaGlnGluValGluCysTyrAlaAspSerSerArgAsnAsp  
 TyrThrArgAlaAlaGlu-144  
 150-GlyLysLeuProSerGlyCys-156

173-AspAlaTrpArgGly-177

186-ProThrThrAspGlyArgAsn-192  
 201-PheAspGlyGlyThrGlnGlySerArgGlu-210  
 217-IleGlyLysGluAlaArgLysSerProAsn-226  
 232-SerGluMetGluSerGlyLeuSerProGluGlnArgSer-244  
 270-ValAlaAspArgArgGlnLeuThrAspAspGlnIle-281  
 287-AlaAlaLeuArgAlaArgArgTrpAspGlu-296

304-MetProGluLysLeuGlnLys-310  
 320-ArgSerArgAlaAlaThr-325

327-AsnThrGlnGluAlaGluLysLeuTyrLys-336  
 350-AlaGlyGluGluLeuGlyArgLysIleAspThrArgAsnAsnValProAspAlaGlyLys-369  
 374-ArgMetAlaGluAspGlyAlaIleLys-382  
 389-ArgAsnSerArgThrAlaGlyAspAlaLysMetArgArgGlnAlaGlnAla-405  
 411-ThrArgGlyPheAspGluAspLysLeuLeu-420  
 438-SerAlaGluArgThrAspArgLysLeu-446  
 478-IleArgGlnGluSerArgPhe-484  
 504-ThrAlaArgGluIleAlaGly-510

535-AspThrLysArgArgLeuGlnAsn-542  
 554-GlyProGlyArgAlaArgArgTrpGlnAla-563

579-SerGluThrArgaspTyrValLys-586

606-LeuLysGlnArgMetGly-611

**g023**

**AMPHI Regions - AMPHI**  
 43-GluTyrProAlaTrpGlnAlaPhePheSerGlnAlaTrpValLysValPheThrGlnValSerPheIleAlaV  
 alPheLeuHisAlaTrpValGly-74  
 77-AspLeuTrpMetAspTyrIleLys-84

**Antigenic Index - Jameson-Wolf**

1-MetValGluArgLysLeuThr-7  
 40-LeuProLysGluTyrProAlaTrp-47

**Hydrophilic Regions - Hopp-Woods**

1-MetValGluArgLysLeuThr-7

**g025**

**AMPHI Regions - AMPHI**  
 9-AlaAlaCysThrAlaValAlaLeuLeuGlyGlyCysAla-22  
 35-GlyMetGlnThrValSerSer-41  
 46-AsnProTyrGlyAlaThrProTyr-53  
 126-AspPheArgAlaTrpAsnGlyMetThrAsp-135  
 140-IleGlyGlnIleValLysVal-146  
 173-ValLysProAlaAla-177  
 181-ValGlnSerAlaProGlnPro-187  
 212-SerGlyThrArgSer-216  
 229-LysValValAlaAspPhe-234

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265-GlyLeuArgGlyTyrGlyAsn-271

**Antigenic Index** - Jameson-Wolf

22-AlaThrGlnGlnPro-26  
 108-ValArgGlyAspThr-112  
 115-AsnIleSerLysArgTyrHisIleSerGlnAspAspPheArgAla-129  
 131-AsnGlyMetThrAspAsnThrLeu-138  
 144-ValLysValLysProAlaGly-150  
 152-AlaAlaProLysThrAlaAlaValGluSerArgProAlaValPro-166  
 171-ThrProValLysProAlaAlaGlnProProValGlnSerAlaProGlnPro-187  
 190-ProAlaAlaGlnAsnLysAlaValPro-198  
 202-ProAlaProGlnSerProAlaAlaSerProSerGlyThrArgSerValGly-218  
 224-ArgProThrGlnGlyLysValValAlaAspPheGlyGlyGlyAsnLysGlyValAsp-242  
 255-AlaAspGlyLysVal-259  
 264-SerGlyLeuArgGlyTyrGly-270  
 285-TyrGlyHisAsnGln-289  
 292-LeuValGlyGluGlyGlnGlnValLysArgGlyGlnGln-304  
 309-GlyAsnThrAspAlaSerArgThrGlnLeu-318  
 320-PheGluValArgGlnAsnGlyLysProValAsnProAsnSer-333

**Hydrophilic Regions** - Hopp-Woods

108-ValArgGlyAspThr-112  
 120-TyrHisIleSerGlnAspAspPheArg-128  
 144-ValLysValLysPro-148  
 157-AlaAlaValGluSerArgProAla-164  
 171-ThrProValLysProAlaAla-177  
 190-ProAlaAlaGlnAsnLysAlaValPro-198  
 212-SerGlyThrArgSer  
 235-GlyGlyGlyAsnLysGlyValAsp-242  
 255-AlaAspGlyLysVal-259  
 295-GluGlyGlnGlnValLysArgGlyGln-303  
 311-ThrAspAlaSerArgThr-316  
 322-ValArgGlnAsnGlyLysProValAsn-330

g032

**AMPHI Regions** - AMPHI

9-AlaValLeuArgArgProArgPheGlu-17  
 67-ProPheAlaGlyAsnValTyrPrcArgPheValGlnIle-79  
 114-ValHisGlyGlnIleGlnHisProValGlnProPheLeuArg-127  
 134-LeuGlyLeuLeuArgArgPheAspVal-142  
 174-GlnThrAlaLeuArg-178  
 204-LeuCysGlnGlnCysLysGlnPhePheGlnIleAla-215

**Antigenic Index** - Jameson-Wolf

1-MetArgArgAsnVal-5  
 10-ValLeuArgArgProArgPhe-16  
 28-ArgAlaValProAlaGlyLysGlnGlyPhe-37  
 41-CysArgLeuThrGlnArg-46  
 58-GlyGlnArgAsnLeu-62  
 100-LeuGluGlnArgValValAlaHisArgGlnArgVal-111  
 138-ArgArgPheAspValGlyGlyArgValGlyAla-148

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151-ProAlaPheAspGlnProGlyAla-158

160-LeuProProArgArgGlnLeuAlaArgGlnArgProThrVal-173

176-AlaLeuArgGlnProProGlnArgArgLysIleAlaProArgGlnValLeu-193

202-ArgHisLeuCysGlnGlnCysLys-209

216-ProValCysArgAsnArgValLeuArg-224

236-ValLysIleArgArgLysProValGlnAsnHisAsnArgProThrGlnIleSerLysAsnGln-256

#### **Hydrophilic Regions - Hopp-Woods**

1-MetArgArgAsnVal-5

10-ValLeuArgArgProArgPhe-16

41-CysArgLeuThrGln-45

100-LeuGluGlnArgValValAlaHisArgGlnArgVal-111

138-ArgArgPheAspValGlyGly-144

161-ProProArgArgGlnLeuAlaArgGlnArgProThrVal-173

177-LeuArgGlnProProGlnArgArgLysIleAlaPro-189

218-CysArgAsnArgValLeu-223

236-ValLysIleArgArgLysProValGlnAsnHisAsnArgProThrGlnIleSerLysAsnGln-256

**g033-2**

#### **AMPHI Regions - AMPHI**

6-GlnTyrGlyGlyLeuAlaGlyPheProLysArgCysGluSerGlu-20

64-GlyGlnAlaPheGluAlaLeuAsnCys-72

95-ValGlyAlaLeuProLysTyrLeuAlaSerAsnValValArgAspMetHisGlyLeuLeuSerThrVal-117

120-GlnThrGlyLysValLeuAspLysIleProGlyAlaMetGlu-133

142-IleLysThrLeuAlaGlu-147

157-SerLeu

PheGluAsnPhe-162

168-GlyProValAspGlyHisAsnValGluAsnLeuValAspValLeuLysAspLeuArgSerArg-188

207-AlaGluAsnAspPro-211

213-LysTyrHisAlaValAlaAsnLeuProLysGluGlyGlyAla-226

242-TyrThrGlnValPheGlyLys-248

280-PheProAspArgTyrPheAspVal-287

307-LysProValValAlaIleTyrSer-314

316-PheLeuGlnArgAlaTyrAspGlnLeu-324

363-CysValProAsnMet-367

390-AlaProAlaAlaValArgTyrProArgGlyThr-400

406-ValSerAspGlyMetGluThrValGlu-414

419-IleIleArgArgGlu-423

453-MetArgPheValLysProIleAspGluGlu-462

469-ArgSerHisAspArgIle-474

489-AlaValLeuGluValLeu-494

510-AspThrValThrGluHisGlyAspProLysLysLeuLeu-522

#### **Antigenic Index - Jameson-Wolf**

11-AlaGlyPheProLysArgCysGluSerGluTyrAspAla-23

28-HisSerSerThrSerIle-33

41-AlaAlaAspLysLeuLeuGlyGlyAspArgArgSerVal-53

57-GlyAspGlyAlaMetThr-62

72-CysAlaGlyAspMetAspVal-78

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85-AsnAspAsnGluMetSerIle-91

105-AsnValValArgAspMetHisGly-112  
 117-VallLysAlaGlnThrGlyLysValLeuAspLysIleProGly-130  
 134-PheAlaGlnLysValGluHisLysIleLysThrLeuAlaGluGluAlaGluHisAlaLysGln-154  
 166-TyrThrGlyProValAspGlyHisAsn-174  
 181-ValLeuLysAspLeuArgSerArgLysGlyProGln-192  
 197-IleThrLysGlyAsnGlyTyrLysLeuAlaGluAsnAspProValLys-213  
 219-AsnLeuProLysGluGlyGlyAlaGlnMetProSerGluLysGluProLysProAlaAlaLysProThrTyr-242  
 253-ArgAlaAlaAlaAspSerArgLeu-260  
 266-AlaMetArgGluGlySerGlyLeuValGluPheGluGlnArgPheProAspArgTyrPhe-285  
 345-ValGlyAlaAspGlyProThrHis-352  
 370-AlaAlaProSerGluAsnGluCysArg-379  
 395-ArgTyrProArgGlyThrGlyAlaProValSerAspGlyMetGluThrValGluIleGlyLysGlyIleIleArgArgGluGlyGluLysThrAla-428  
 457-LysProIleAspGluGluLeuIle-464  
 467-LeuAlaArgSerHisAspArgIleValThrLeuGluGluAsnAlaGluGlnGlyGlyAlaGlyGly-488  
 511-ThrValThrGluHisGlyAspProLysLysLeuLeuAspAspLeuGlyLeu-527  
 530-GluAlaValGluArgArgValArgGluTrpLeuProAspArgAspAlaAlaAsn-547

**Hydrophilic Regions - Hopp-Woods**

13-PheProLysArgCysGluSerGluTyrAsp-22  
 41-AlaAlaAspLysLeuLeuGlyGlyAspArgArgSerVal-53  
 74-GlyAspMetAspVal-78  
 85-AsnAspAsnGluMetSerIle-91  
 106-ValValArgAspMetHis-111  
 123-LysValLeuAspIleProGly-130  
 134-PheAlaGlnLysValGluHisLysIleLysThrLeuAlaGluGluAlaGluHisAlaLysGln-154  
 181-ValLeuLysAspLeuArgSerArgLysGlyPro-191  
 197-IleThrLysGlyAsnGly-203  
 205-LysLeuAlaGluAsnAspProValLys-213  
 220-LeuProLysGluGlyGlyAla-226  
 228-MetProSerGluLysGluProLysProAlaAla-238  
 253-ArgAlaAlaAlaAspSerArgLeu-260  
 266-AlaMetArgGluGlySerGly-272  
 274-ValGluPheGluGlnArgPheProAspArgTyrPhe-285  
 372-ProSerAspGluAsnGluCys-378  
 405-ProValSerAspGlyMetGluThrValGluIleGlyLysGlyIleIleArgArgGluGlyGluLysThrAla-428  
 457-LysProIleAspGluGluLeuIle-464  
 467-LeuAlaArgSerHisAspArgIleValThrLeuGluGluAsnAlaGluGlnGlyGly-485  
 511-ThrValThrGluHisGlyAspProLysLysLeuLeuAsp-523  
 530-GluAlaValGluArgArgValArgGluTrpLeuProAspArgAspAlaAlaAsn-547

**g034****AMPHI Regions - AMPHI**

35-LeuAspHisAlaAla-39  
 52-AsnLeuGluGlnMetArgAlaIleMetGluAlaAlaAspGln-65  
 94-AlaValGluGluPheProHisIlePro-102  
 152-ThrValValAsnPheSer-157

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158-IleGlyValLeuGlyAsnLeuGluThrGly-177  
 197-LeuThrSerValGluAspAlaValArgPheValLysAspThrGly-211  
 226-TyrLysPheThrArgProProThrGly-234  
 236-ValLeuArgIleAspArgIleLysGluIleHisGlnAlaLeu-249  
 261-SerValProGlnGluTrpLeuLysValIleAsnGluTyrGlyGlyAsnIleGluGluThrTyrGlyValPro  
 ValGluGluIleValGluGlyIleLysHisGly-295  
 314-ArgArgTyrLeuAlaGluAsn-320  
 330-LeuGlyLysThrIleGluAlaMetLys-338

**Antigenic Index - Jameson-Wolf**

20-LeuProLysGluThrGln-25  
 37-HisAlaAlaGluAsnSerTyrGly-44  
 54-GluGlnMetArgAlaIleMetGluAlaAlaAspGlnVal-66  
 75-SerAlaGlyAlaArgLysTyrAla-82  
 106-HisGlnAspHisGlyAlaSerProAspValCysGlnArgSerIle-120  
 132-SerLeuLeuGluAspGlyLysThrProSerSerTyrGluTyr-145  
 164-ValGluGlyGluIle-168  
 173-AsnLeuGluThrGlyGluAlaGlyGluGluAspGlyValGlyAla-187  
 191-LeuSerHisAspGln-195  
 199-SerValGluAspAlaValArgPheValLysAspThrGlyValAsp-213  
 221-ThrSerHisGlyAla-225  
 227-LysPheThrArgProProThrGlyAspValLeuArgIleAspArgIleLysGluIleHis-246  
 258-GlySerSerSerValPro-263  
 271-AsnGluTyrGlyGlyAsnIleGlyGlu-279  
 287-GluIleValGluGlyIleLysHisGlyValArgLysValAsnIleAspThrAspLeuArgLeuAlaSerThr  
 GlyAlaVal-313  
 316-TyrLeuAlaGluAsnProSerAspPheAspProArgLysTyrLeuGlyLysThrIleGluAlaMetLys-33  
 8  
 350-CysGluGlyGlnAlaGlyLysIleLysProValSerLeuGluLysMetAlaSerArgTyrAlaLysGlyGlu  
 Leu-374

**Hydrophilic Regions - Hopp-Woods**

54-GluGlnMetArgAlaIleMetGluAlaAlaAspGlnVal-66  
 76-AlaGlyAlaArgLysTyrAla-82  
 108-AspHisGlyAlaSerProAspValCysGln-117  
 132-SerLeuLeuGluAspGlyLysThrProSer-141  
 164-ValGluGlyGluIle-168  
 175-GluThrGlyGluAlaGlyGluGluAspGlyValGlyAla-187  
 199-SerValGluAspAlaValArgPheValLysAspThrGlyVal-212  
 235-AspValLeuArgIleAspArgIleLysGluIleHis-246  
 287-GluIleValGluGlyIleLysHisGlyValArgLysValAsnIleAspThrAspLeuArgLeu-307  
 320-AsnProSerAspPheAspProArgLysTyrLeu-330  
 333-ThrIleGluAlaMetLys-338  
 352-GlyGlnAlaGlyLysIleLysProValSerLeuGluLysMetAlaSerArgTyrAlaLysGlyGluLeu-37  
 4  
 g036

**AMPHI Regions - AMPHI**

59-SerSerGlyArgPheCysGlnThrIleLysAlaAla-70  
 97-AlaAspGlyLeuGlnThrValSerSerAlaAla-107  
 142-AlaValArgArgValProArgGlnLeuArgAspSerArg-154  
 215-CysArgThrThrHisLysThrLeuArgProTyrAlaArgProGlnArgArg-231

**Antigenic Index - Jameson-Wolf**

16-ProAlaArgThrSerSerArgArgCysValProSerGlyArgCys-31  
 35-TyrSerSerArgAlaAspAlaThrProArgArgHisSerGlyAlaVal-51

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**55-CysSerSerAspSerSerGlyArgPhe-63**

74-SerPheSerAlaArgLysThrCysSerAspGlyGluThrSerAlaAspSerAsnTrpArg-93  
 109-AlaAlaGlnSerAspGlyGluAlaGlyArg-118  
 133-SerGlyArgPheCysCysGlyArgArgAlaValArgArgValProArgGlnLeuArgAspSerArgArgArg  
 GlyArgAlaArgGluAsnArgArgArgSerAlaTyr-168  
 171-CysLeuArgArgAlaAspGlyPheProVal-180  
 182-ThrHisCysArgCysArgLeuLysArgArgThrProArgGlyGlyGlnCys-198  
 200-ProProTyrArgLeuAspAsnArgSerAsnGlyGlyGlySerAlaCysArgThrThrHisLysThrLeuArg  
 ProTyrAlaArgProGlnArgArgValCysSer-234  
 239-AlaAlaArgArgArgHisArgAlaTrpGlyCysArgLeuLysAlaCysArg-255  
 258-LeuProAsnLeuAlaProArgArgCysArgTyrAlaVal-270

**Hydrophilic Regions - Hopp-Woods**

17-AlaArgThrSerSerAspArgCysValPro-27  
 37-SerArgAlaAspAlaThrProArgArgArgHisSerGly-49  
 55-CysSerSerAspSerSerGlyArg-62  
 76-SerAlaArgLysThrCysSerAspGlyGluThrSerAla-88  
 110-AlaGlnSerAspGlyGluAlaGlyArg-118  
 137-CysCysGlyArgArgAlaValArgArgValProArgGlnLeuArgAspSerArgArgArgGlyArgAlaArg  
 GluAsnArgArgArgSerAlaTyr-168  
 171-CysLeuArgArgAlaAspGlyPhePro-179  
 182-ThrHisCysArgCysArgLeuLysArgArgThrProArgGlyGlyGln-197  
 202-TyrArgLeuAspAsnArgSerAsnGlyGly-211  
 213-SerAlaCysArgThrThrHisLysThrLeuArgProTyrAlaArgProGlnArgArgValCys-233  
 239-AlaAlaArgArgArgHisArgAlaTrp-247  
 251-LeuLysAlaCysArg-255  
 262-AlaProArgArgCysArgTyrAlaVal-270  
**g038**  
**AMPHI Regions - AMPHI**  
 161-GlyLysLeuSerAlaValGlnGluValGluLys-171  
 178-AlaProIleAlaSerLeuAsn-184  
 195-GluPheGlyGlnPheLeuGluProValArgThrTyrArgArgGlnTyrGlyVal-212

**Antigenic Index - Jameson-Wolf**

2-ThrAspPheArgGlnAspPhe-8  
 22-GluPheThrThrLysAlaGlyArgArgSerPro-32  
 38-GlyLeuPheAsnAspGlyAlaSer-45  
 58-IleGluSerGlyIleArg-63  
 85-LeuAlaGluLysGlyVal-90  
 96-TyrAsnArgLysGluAlaLysAspArgGlyGluGlyGlyVal-109  
 125-VallleSerAlaGlyThrSerValArgGluSerIleLysLeuIleGluAlaGluGlyAlaThr-145  
 153-LeuAspArgMetGluLysGlyThrGlyLysLeuSerAla-165  
 167-GlnGluValGluLysGlnTyrGlyLeu-175  
 191-GlnAsnAsnProGluPheGlyGln-198  
 201-GluProValArgThrTyrArgArgGlnTyrGlyValGlu-213

**Hydrophilic Regions - Hopp-Woods**

2-ThrAspPheArgGlnAspPhe-8  
 22-GluPheThrThrLysAlaGlyArgArgSer-31  
 85-LeuAlaGluLysGlyVal-90  
 96-TyrAsnArgLysGluAlaLysAspArgGlyGluGly-107

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130-ThrSerValArgGluSerIleLysLeuIleGluAlaGluGlyAlaThr-145  
 153-LeuAspArgMetGluLysGlyThrGlyLys-162  
 167-GlnGluValGluLysGlnTyr-173  
 204-ArgThrTyrArgArgGlnTyrGly-211  
**g040**  
**AMPHI Regions - AMPHI**  
 6-SerPheValAlaHisPhe-11  
 14-AlaAlaProTyrIleArgGlnMetArgGlyThr-24  
 38-GlyThrLeuAsnLysLeu-43  
 65-HisPheLeuAspArg-69  
 78-ProHistYrcysArgGlyLeuArgValThrAspGluThr-90  
 95-AlaGlnGlnPheAlaGly-100  
 113-SerGlnSerGlyPheAlaArgAlaPro-121  
 136-MetGlyValIleAsp-140  
 146-TyrAlaGlyValIleArg-151  
 207-LeuSerAspGlyIleSerArgProAspGlyThrLeuAlaGlu-220  
 223-SerAlaGlnGluAlaGlnSerLeuAlaGluHisAla-234  
 244-SerAlaValAlaAlaLeuGluGly-251  
 277-IleGlyThrSerIle-281  
 289-IleArgGlnAlaHisSerGlyAspIleProHisIleAlaAlaLeuIleArgProLeuGlu-308  
 320-TyrLeuGluAsnHisIleSerGluPheSerIle-330  
 338-TyrGlyCysAlaAlaLeuLysThrPheAlaGluAlaAsp-350  
 371-ArgLeuLeuAlaHisIle-376  
 386-SerArgLeuPheAla-390

**Antigenic Index - Jameson-Wolf**

2-AsnAlaProAspSer-6  
 11-PheArgGluAlaAlaProTyrIleArgGlnMetArgGlyThrThr-25  
 29-GlyIleAspGlyArgLeuLeuGluGlyGlyThr-39  
 74-GlnGlyArgThrProHisTyrCysArgGlyLeuArgValThrAspGluThrSerLeuGlyGln-94  
 101-ThrValArgSerArgPheGlu-107  
 119-ArgAlaProSerVal-123  
 134-ArgProMetGlyVal-138  
 140-AspGlyThrAspMetGluTyr-146  
 150-IleArgLysThrAspThrAlaAla-157  
 162-LeuAspAlaGlyAsn-166  
 173-LeuGlyHisSerTyrGlyGlyLysThrPheAsn-183  
 208-SerAspGlyIleSerArgProAspGlyThrLeuAla-219  
 222-LeuSerAlaGlnGluAlaGlnSerLeuAla-231  
 234-AlaAlaSerGluThrArgArgLeuIle-242  
 249-LeuGluGlyGlyVal-253  
 261-GlyAlaAlaAspGlySerLeuLeu-268  
 272-PheThrArgAsnGlyIleGlyThrSerIleAlaLysGluAla-285  
 290-ArgGlnAlaHisSerGlyAspIle-297  
 305-ArgProLeuGluGluGlnGly-311  
 315-HisArgSerArgGluTyrLeu-321  
 329-SerIleLeuGluHisAspGlyAspLeuTyr-338  
 345-ThrPheAlaGluAlaAspCysGlyGlu-353  
 361-ProGlnAlaGlnAspGlyGlyTyrGlyGluArgLeu-372  
 377-IleAspLysAlaArgGly-382  
 393-ThrAsnThrGlyGlu-397

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402-ArgGlyPheGlnThrAlaSerGluAspGluLeuProGluThrArgArgLysAspTyrArgSerAsnGlyArg  
AsnProHisIleLeu-430

**Hydrophilic Regions - Hopp-Woods**

11-PheArgGluAlaAlaPro-16  
 30-IleAspGlyArgLeuLeuGlu-36  
 84-LeuArgValThrAspGluThrSerLeu-92  
 102-ValArgSerArgPheGlu-107  
 140-AspGlyThrAspMetCluTyr-146  
 150-IleArgLysThrAspThrAlaAla-157  
 210-GlyIleSerArgProAspGlyThrLeu-218  
 222-LeuSerAlaGlnGluAlaGlnSerLeuAla-231  
 234-AlaAlaSerGluThrArgArgLeuIle-242  
 291-GlnAlaHisSerGlyAsp-296  
 305-ArgProLeuGluGluGlnGly-311  
 315-HisArgSerArgGluTyrLeu-321  
 332-GluHisAspGlyAspLeu-337  
 345-ThrPheAlaGluAlaAspCysGlyGlu-353  
 362-GlnAlaGlnAspGlyGlyTyrGlyGlu-370  
 377-IleAspLysAlaArgGly-382

402-ArgGlyPheGlnThrAlaSerGluAspGluLeuProGluThrArgArgLysAspTyrArgSerAsnGlyArg  
Asn-426

**g041-1**

**AMPHI Regions - AMPHI**

6-AspProTyrArgHisPheGluAsnLeuAspSerAlaGluThr-19  
 45-AspGlyIleLeuAsnGlnMetGlnAsp-53  
 77-ProLysGlyValTyrArgMetCysThrAlaAla-87  
 102-ValAlaAspPheAspGluLeuLeu-109  
 117-GlyValSerHisLeuValGluGlnProAsn-126  
 218-MetValAsnAlaTrpArgTyrLeuAsp-226  
 232-IleAspLeuIleGluAlaSer-238  
 257-ProLeuAsnLeuProAsnAspCysAspValValGlyTyrLeu-270  
 317-GlnAlaLeuGluSerValGluThr-324  
 331-AlaSerLeuGluAsnValGlnGlyArg-340  
 382-AspPheThrThrProLeu-387  
 451-GlyPheGlyIleProGluLeuProHisTyrLeuGlySerValGlyLys-466  
 493-AlaAlaGlnGlyIleSerLysHisLysSerValAspAspLeuLeuAlaValValArgAspLeuSerGluArg-516  
 519-SerSerProLysHis-523  
 541-ValArgGluProGlnSer-546  
 556-LeuThrAspMetIleArgTyr-562  
 571-TrpThrAspGluTyrGlyAsnProGlnLysTyrGluAlaCysLysArgArgLeuGly-589  
 591-LeuSerProTyrHisAsnLeuSerAspGlyIleAspTyrProPro-605  
 620-AlaHisAlaLeuLys-624  
 645-GlyHisThrGlyAsn-649  
 651-ThrGlnArgGluSer-655

**Antigenic Index - Jameson-Wolf**

1-MetLysSerTyrProAspProTyrArgHisPheGluAsnLeuAspSerAlaGluThrGln-20

26-AlaAsnAlaGluThrArgAlaArgPheLeuAsnAsnAspLysAlaArgAlaLeuSerAspGlyIle-47

51-MetGlnAspThrArgGlnIleProPhe-59

61-GlnGluHisArgAlaArg-66  
 72-GlnAsnAlaGluTyrProLysGlyVal-80  
 89-TyrArgSerGlyTyrProGluTrp-96  
 104-AspPheAspGluLeuLeuGlyAspAspValTyr-114  
 123-GluGlnProAsnArg-127  
 132-LeuAsnLysSerGlyGlyAspThr-139  
 145-ValAspLeuGluAlaGlyGluLeuValGlu-154  
 161-AlaGlyLysAsnHisValSerTrpArgAspGluAsnSerVal-174  
 178-ProAlaTrpAspGluArgGlnLeuThrGluSerGlyTyrProArgGluValTrpLeuValGluArgGlyLys  
 SerPheGluGluSerLeuPro-208  
 211-GlnIleAspLysGlyAla-216  
 223-CysTyrLeuAspProGlnGlySerProIleAspLeuIleGluAlaSerAspGlyPheTyr-242  
 249-ValSerSerGluGlyGlyAlaLysProLeuAsnLeuProAsnAspCysAspVal-266  
 278-LeuArgLysAspTrpHisArgGluAlaAsnGlnSerTyrProSer-291  
 298-LysLeuAsnArgGlyGluLeuGly-305  
 313-ProAspGluThrGlnAla-318  
 320-GluSerValGluThrThrLys-326  
 337-ValGlnGlyArgLeuLysAla-343  
 345-ArgPheAlaAspSerLysTrpGlnGluAlaGluLeuProHisLeuProSerGly-362  
 365-GluMetThrAspGlnProTrpGlyGly-373  
 405-GlnProGlnGlnPheValSerAspGlyIleGluVal-416  
 422-ValSerSerAspGlyGluArgIle-429  
 435-GlyLysAsnAlaAlaProAspThr-442  
 479-AsnIleArgGlyGlyGluPheGlyProArgTrpHis-491  
 496-GlyIleSerLysHisLysSerValAspAsp-505  
 511-ArgAspLeuSerGluArgGlyMetSerSerProLysHis-523  
 528-GlyGlySerAsnGly-532  
 540-PheValArgGluProGlnSerIleGlyAla-549  
 568-GlySerSerTrpThrAspGluTyrGlyAsnProGlnLysTyrGluAlaCysLysArgArgLeuGlyGluLeu  
 SerProTyr-594  
 596-AsnLeuSerAspGlyIleAspTyrPro-604  
 610-ThrSerLeuSerAspAspArgValHis-618  
 627-AlaLysLeuArgGluThrSerProGlnSer-636  
 639-TyrSerProAspGlyGlyGlyHisThrGlyAsnGlyThrGlnArgGluSerAlaAspLysLeu-659

#### **Hydrophilic Regions - Hopp-Woods**

3-SerTyrProAspProTyrArgHis-10  
 12-GluAsnLeuAspSerAlaGluThr-19  
 26-AlaAsnAlaGluThrArgAlaArgPheLeuAsnAsnAspLysAlaArgAlaLeuSer-44  
 51-MetGlnAspThrArgGln-56  
 61-GlnGluHisArgAlaArg-66  
 104-AspPheAspGluLeuLeuGly-110  
 134-LysSerGlyGlyAsp-138  
 145-ValAspLeuGluAlaGlyGluLeuValGlu-154  
 166-ValSerTrpArgAspGluAsnSer-173  
 180-TrpAspGluArgGlnLeuThr-186  
 198-GluArgGlyLysSerPheGluGluSerLeu-207  
 211-GlnIleAspLysGlyAla-216  
 233-AspLeuIleGluAlaSerAsp-239  
 250-SerSerGluGlyGlyAlaLys-256  
 278-LeuArgLysAspTrpHisArg-284  
 298-LysLeuAsnArgGlyGluLeuGly-305  
 313-ProAspGluThrGlnAla-318  
 320-GluSerValGluThrThrLys-326  
 337-ValGlnGlyArgLeuLysAla-343

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347-AlaAspSerLysTrpGlnGluAlaGluLeu-356  
 412-AspGlyIleGluVal-416  
 424-SerAspGlyGluArg-428  
 436-LysAsnAlaAlaProAsp-441  
 481-ArgGlyGlyGlyGluPheGly-487  
 496-GlyIleSerLysHisLysSerValAspAsp-505  
 511-ArgAspLeuSerGluArgGlyMetSerSer-520  
 540-PheValArgGluProGlnSer-546  
 571-TrpThrAspGluTyrGlyAsn-577  
 579-GlnLysTyrGluIlaCysLysArgArgLeuGlyGlu-590  
 612-LeuSerAspAspArgValHis-618  
 627-AlaLysLeuArgGluThrSer-633  
 650-GlyThrGlnArgGluSerAlaAspLysLeu-659

**g042**

**AMPHI Regions - AMPHI**  
 18-LeuSerAsnThrSerThr-23  
 33-AlaValArgSerMet-37  
 138-SerProLeuValArgIleLeuProLeuSer-147  
 151-SerMetValValAlaPhePheAlaAsn-159

**Antigenic Index - Jameson-Wolf**

16-SerAlaLeuSerAsnThrSerThrAlaAlaGlyProSerCys-29  
 49-TyrSerLysGluThrGlyCysProCysProSerLeuArgLysAspSerSerThrGlyGlyArgProMetSerP  
 roCys-74  
 77-LeuAlaAsnArgAspCysValProLysAlaAspThr-88  
 93-ThrAspSerThrSerProArgProLeu-101  
 109-TrpAlaAsnSerAlaSer-114  
 120-SerAlaThrArgAlaSerLeuProLysIleArgAspArgVal-133  
 160-CysSerTyrAlaSerAlaProGlyPro-168  
 175-GlyLeuTrpArgCysArgAspSerGlnSerGlySerAsnSer-188  
 197-AsnAlaGlyCysLys-201

**Hydrophilic Regions - Hopp-Woods**

49-TyrSerLysGluThrGlyCys-55  
 59-SerLeuArgLysAspSerSerThrGlyGlyArgProMet-71  
 78-AlaAsnArgAspCysValProLysAlaAspThr-88  
 94-AspSerThrSerProArg-99  
 122-ThrArgAlaSerLeuProLysIleArgAspArgVal-133  
 178-ArgCysArgAspSerGlnSerGly-185  
**g043-2**

**AMPHI Regions - AMPHI**

21-GluArgPheValGluProSerArg-28  
 34-LysValHisArgGlyLeuAspGlyAlaAlaArgPheAspGluGlyGluArg-50  
 59-AlaSerGlyAspGlyPhe-64  
 81-AspAlaAlaGlyAspPheGlyAspGlyGlnArg-91  
 98-GlnAsnIleGlyGlyPheValTyr-105

**Antigenic Index - Jameson-Wolf**

1-MetProSerAlaPro-5  
 12-ArgArgGlnLysSerValMetProProGluArgPheValGluProSerArg-28  
 34-LysValHisArgGlyLeuAspGlyAlaAlaArgPheAspGluGlyGluArgValPhe-52  
 56-AlaAlaGlnAlaSerGlyAspGlyPheAla-65  
 79-GlnProAspAlaAlaGlyAspPheGlyAspGlyGlnArgAlaGlyGlu-94  
 116-AlaGluGlyGluAla-120

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**Hydrophilic Regions - Hopp-Woods**

12-ArgArgGlnLysSerValMetProProGluArgPheValGluProSerArg-28  
 34-LysValHisArgGlyLeuAspGlyAlaAlaArgPheAspGluGlyGluArgValPhe-52  
 81-AspAlaAlaGlyAspPheGlyAspGlyGlnArgAlaGlyGlu-94  
 116-AlaGluGlyGluAla-120  
 g046

**AMPHI Regions - AMPHI**

6-ArgProThrSerSerPro-11  
 46-ThrSerCysSerGlyLeuMetValSer-54  
 64-PheSerLeuPheSerSer-69  
 113-LysSerAlaSerSer-117  
 143-SerCysAsnAlaPheSerSer-149

**Antigenic Index - Jameson-Wolf**

6-ArgProThrSerSerProProArgArgAlaCys-16  
 20-IleArgThrArgSerSerAlaLysArgLysThrCysAsnAlaProGlyGlnSerIleArgProAlaSerCysS-  
 er-44  
 57-ProAsnMetGluArgLeuPro-63  
 75-SerArgTyrSerLeuGluArgThrArgAlaMetArgProGlyMetLeuAsnArgSerAlaAla-95  
 105-SerLeuArgGluSerAlaSerSerLysSerAlaSerSerAlaProAlaArgTyrAsnValLysGlyAspAla-  
 ProLeuPro-131  
 133-ThrValTrpThrSerArgArgLeuProVal-142  
 169-GluProThrCysProLeuProLys-176

**Hydrophilic Regions - Hopp-Woods**

7-ProThrSerSerProProArgArgAlaCys-16  
 20-IleArgThrArgSerSerAlaLysArgLysThrCysAsn-32  
 36-GlnSerIleArgProAlaSer-42  
 58-AsnMetGluArgLeuPro-63  
 75-SerArgTyrSerLeuGluArgThrArgAlaMetArg-86  
 105-SerLeuArgGluSerAlaSerSerLysSerAlaSer-116  
 122-TyrAsnValLysGlyAspAlaProLeu-130  
 g047

**AMPHI Regions - AMPHI**

17-IleAlaAspIleAlaGlnAspLeuProAspGlyAla-28  
 62-AlaGluAsnIleGlyAlaVal-68  
 89-AsnIleCysTyrArgLeuAlaLysGlnLeuGlu-99  
 141-TyrIleAspGluIleAspValPhe-148  
 161-SerAlaLeuLeuAla-165  
 185-LeuLeuGluGlyAsn-189  
 202-IleGlySerIleLeuAla-207  
 247-SerGlyIleLysTrpProGluGlyCys-255

257-IleAlaAlaValValArgAlaGlyThrGly-266  
 293-IleLeuAsnGluLeuGluLysLeuIle-301

**Antigenic Index - Jameson-Wolf**

5-GlnAlaArgArgGlyGlyLeuLeu-12  
 20-IleAlaGlnAspLeuProAspGlyAlaAsp-29  
 36-TyrArgAsnAsnArgLeu-41  
 51-IleGluGlyAspGlu-55  
 70-ProGluLeuArgProLysGluThrSerThrArgArgIleMet-83  
 96-LysGlnLeuGluHis-100

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106-IleIleGluCysArgProArgArgAlaGluTrpIle-117

119-GluAsnLeuAspAsnThrLeu-125  
 130-SerAlaThrAspGluThrLeuLeuAspAsnGluTyrIleAspGluIleAsp-146  
 152-ThrAsnAspAspGluSerAsnIle-159  
 168-LeuGlyAlaLysArgVal-173  
 178-AsnArgSerSerTyr-182  
 186-LeuGluGlyAsnLysIle-191  
 208-HisIleArgArgGlyAspIleVal-215  
 219-ProIleArgArgGlyThrAlaGluAlaIleGlu-229  
 232-AlaHisGlyAspLysThrSer-239  
 242-IleGlyArgArgIleSerGlyIleLysTrpProGluGlyCysHis-256  
 262-ArgAlaGlyThrGlyGluThr-268  
 277-ValIleGlnAspGlyAspHis-283  
 288-ValSerArgArgArgIleLeuAsnGluLeuGluLys-299

**Hydrophilic Regions - Hopp-Woods**

5-GlnAlaArgArgGlyGly-10  
 20-IleAlaGlnAspLeuProAspGlyAlaAsp-29  
 51-IleGluGlyAspGlu-55  
 70-ProGluLeuArgProLysGluThrSerThrArgArgIleMet-83  
 106-IleIleGluCysArgProArgArgAlaGluTrpIle-117  
 130-SerAlaThrAspGluThrLeuLeu-137  
 140-GluTyrIleAspGluIleAsp-146  
 152-ThrAsnAspAspGluSerAsnIle-159  
 168-LeuGlyAlaLysArgVal-173  
 186-LeuGluGlyAsnLysIle-191  
 209-IleArgArgGlyAspIle-214  
 219-ProIleArgArgGlyThrAlaGluAlaIleGlu-229  
 232-AlaHisGlyAspLysThrSer-239  
 242-IleGlyArgArgIleSer-247  
 277-ValIleGlnAspGlyAsp-282  
 289-SerArgArgArgIleLeuAsnGluLeuGluLys-299

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**AMPHI Regions - AMPHI**

15-GlnHisLeuLeuGlu-19  
 34-AspHisAlaValAspGlyIleGlyGlnMet-43  
 50-GlnProPheGlyGln-54  
 61-GluHisPheAlaProValAspGlyPheArg-70  
 103-IleGlyValPheProAlaLeu-109  
 199-SerAspPheArgArg-203  
 217-AlaArgLeuThrGlnValPheGlnAlaPhePhe-227  
 241-ValLeuAsnLeuCysArgArgAla-248

**Antigenic Index - Jameson-Wolf**

6-PheAspTyrArgThrArgLeu-12  
 21-IleSerLysGluArgHis-26  
 31-ArgArgThrAspHisAlaValAspGly-39  
 49-AspGlnProPheGly-53  
 64-AlaProValAspGlyPheArgValGlnAspIleAspLeuAspGlyHisGlnArgLeuPhe-83  
 90-PheArgAsnProValCysArgArgThrGlyPhe-100  
 122-GlyIleGluProAspSerProProArgPhe-131  
 135-PheArgAsnArgHisLeuGlnGlySerLeuArgVal-146

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150-PheLeuLysAspAspHisArgValGly-158  
 199-SerAspPheArgArgPheGlyGlnArgHisIleGlyArgArgGlyIleHis-215  
 244-LeuCysArgArgAlaAsnProArgProLysArgSerLeu-256

**Hydrophilic Regions - Hopp-Woods**

21-IleSerLysGluArgHis-26  
 31-ArgArgThrAspHisAlaVal-37  
 67-AspGlyPheArgValGlnAspIleAspLeuAspGlyHisGlnArgLeuPhe-83  
 93-ProValCysArgArgThrGlyPhe-100  
 124-GluProAspSerProProArg-130  
 150-PheLeuLysAspAspHisArgVal-157  
 200-AspPheArgArgPheGly-206  
 208-HisIleGlyArgArgGlyIleHis-215  
 244-LeuCysArgArgAlaAsnProArgProLysArgSerLeu-256  
**g050-1**

**AMPHI Regions - AMPHI**

10-IleGlnSerIleCysAspAlaPheGlnPheIleSerTyrTyr-23  
 25-ProLysAspTyrIleAspAlaLeuTyrLysAlaTrpGlnLys-38  
 94-ValAsnGluGlyVal-98  
 163-AsnProSerAspAsnIleValAspTrpValLeuLys-174  
 177-ProThrMetGlyAla-181  
 235-LeuGluLeuPheGluLysValAsnAla-243  
 250-glyLeuGlyGlyLeuThrThr-256  
 275-AlaMetIleProAsn-279  
 315-AsnGlyLysArgValAspValAsp-322  
 353-LysArgLeuValAspMetLeuAspLys-361  
 367-ValAspPheThrAsnHrgLeu-373  
 379-ProValAspProValGlyAspGlu-386  
 395-AlaThrArgMetAspLysPheThrArgGlnMet-406  
 452-LysSerSerLysValLeuAlaPhe-459  
 490-AlaThrAlaProArgLysTrp-496

**Antigenic Index - Jameson-Wolf**

4-IleLysGlnGluAspPheIle-10  
 23-TyrHisProLysAspTyrIleAspAlaLeu-32  
 36-TrpGlnLysGluGluAsnProAlaAlaLysAspAlaMet-48  
 55-SerArgMetCysAlaGluAsnAsnArgProIleCysGlnAspThrGly-70  
 88-MetSerValGluLysMetValAsnGluGlyValArgArgAlaTyrThrTrpGluGlyAsnThrLeuArgAlaSerVal-113  
 116-AspProAlaGlyLysArgGlnAsnThrLysAspAsnThr-128  
 138-ProGlyGlyLysValGluVal-144

148-AlaLysGlyGlyGlySerGluAsnLysSerLysLeu-159  
 163-AsnProSerAspAsnIle-168  
 192-GlyIleGlyGlyThrProGluLysAlaValLeuMetAlaLysGluSerLeu-208  
 213-AspIleGlnGluLeuGlnGluLysAlaAlaSerGlyAlaGluLeuSerThr-229  
 284-ArgHisValGluPheGluLeuAspGlySerGlyProValGluLeuThrProProArgValGluAspXxxProAspLeuThrTyrSerProAspAsnGlyLysArgValAspValAspLysLeuThrLysGluGluValAlaSerLysThrGlyAsp-336  
 345-LeuThrGlyArgAspAlaAlaHisLysArgLeu-355  
 359-LeuAspLysGlyGluGluLeuPro-366  
 379-ProValAspProValGlyAspGluValValGlyProAlaGlyProThrThrAlaThrArgMetAspLysPheThrArgGlnMetLeu-407  
 416-IleGlyLysSerGluArgGlyAlaAlaThr-425  
 428-AlaIleAlaAspAsnLysAla-434

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450-AlaIleLysSerSerLys-455  
 470-PheGluValLysAspMetPro-476  
 481-ValAspSerLysGlyGluSerIle-488  
 492-AlaProArgLysTrpGlnAla-498

**Hydrophilic Regions - Hopp-Woods**  
 4-IleLysGlnGluAspPheIle-10  
 36-TrpGlnLysGluGluAsnProAlaAlaLysAspAlaMet-48  
 57-MettCysAlaGluAsnAsnArgProIleCys-66  
 88-MetSerValGluLysMetValAsnGluGlyValArgArg-100

117-ProAlaGlyLysArgGlnAsnThrLysAspAsnThr-128  
 140-GlyLysValGluVal-144

148-AlaLysGlyGlyGlySerGluAsnLysSerLysLeu-159  
 195-GlyThrProGluLysAlaValLeuMetAlaLysGluSerLeu-208  
 213-AspIleGlnGluLeuGlnGluLysAlaAlaSer-223

225-AlaGluLeuSerThr-229

284-ArgHisValGluPheGluLeuAspGly-292

299-ThrProProArgValGluAspXxxProAsp-308  
 313-ProAspAsnGlyLysArgValAspValAspLysLeuThrLysGluGluValAlaSer-331

345-LeuThrGlyArgAspAlaAlaHisLysArgLeu-355  
 359-LeuAspLysGlyGluGluLeuPro-366  
 382-ProValGlyAspGluValVal-388  
 397-ThrArgMetAspIlePheThrArgGlnMetLeu-407  
 417-GlyLysSerGluArgGlyAlaAlaThr-425  
 428-AlaIleAlaAspAsnLysAla-434  
 450-AlaIleLysSerSerLys-455  
 470-PheGluValLysAspMetPro-476  
 481-ValAspSerLysGlyGluSerIle-488  
 492-AlaProArgLysTrpGlnAla-498

**g052**

**AMPHI Regions - AMPHI**  
 12-AlaProCysPheLysGlyCysGluProThrGlyAsp-23  
 41-AlaLysAlaSerLysSerAlaThrSerProLysGlyLeuAspGlyValSerLys-58  
 67-ThrAlaAlaPheHisSerPheIleSer-75  
 84-MetProAsnLeuValThrMetLeu-91

**Antigenic Index - Jameson-Wolf**

4-ValAlaGluGluThrGluIle-10  
 14-CysPheLysGlyCysGluProThrGlyAspSerArgLeuLeuSerThrThrLysSerAlaPro-34  
 37-CysAlaAsnSerAlaLysAlaSerLysSerAlaThrSerProLysGlyLeuAspGlyValSerLysAsnSerSer-61  
 75-SerValGlyAspThrArgLeuThrProMet-84  
 97-ValValProAsnArgLeuArgLeuGluThrThrTrpSerProAlaCysArgLysValLysAsnAlaAla-119

**Hydrophilic Regions - Hopp-Woods**

4-ValAlaGluGluThrGluIle-10  
 16-LysGlyCysGluProThrGlyAspSerArgLeu-26  
 30-ThrLysSerAlaPro-34  
 39-AsnSerAlaLysAlaSerLysSerAlaThrSerProLysGlyLeuAspGlyValSerLysAsnSer-60

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77-GlyAspThrArgLeu-81  
 100-AsnArgLeuArgLeu-104  
 111-AlaCysArgLysValLysAsnAlaAla-119

**g075-2**

**AMPHI Regions - AMPHI**  
 15-LysSerAlaAlaLysThrProThrThrIleGlnProAlaSerIleProSer-31  
 65-AlaProTyrLeuArgGlnValLeu-72  
 80-PheLysLysCysLeuAla-85  
 92-PheArgArgProProAsn-97  
 114-ValAlaAspPhePheGlnThrCysValAsnArgPhePheGluValValGluIleIleGlyIleGly-135

**Antigenic Index - Jameson-Wolf**

12-GluAsnThrLysSerAlaAlaLysThrProThr-22  
 25-GlnProAlaSerIlePro-30  
 52-AlaLysAlaSerGly-56  
 90-GluPhePheArgArgProProAsnIleArgLysSerValPheGlnLysSerGluTyrAspLys-110

**Hydrophilic Regions - Hopp-Woods**

12-GluAsnThrLysSerAlaAlaLysThr-20  
 52-AlaLysAlaSerGly-56  
 90-GluPhePheArgArgProProAsnIleArgLysSerValPheGlnLysSerGluTyrAspLys-110

**g080-2**

**AMPHI Regions - AMPHI**  
 6-GluAlaMetGluArgLeuThrArg-13  
 95-PheProAspThrValGlu-100  
 108-ProValAlaArgTrpGlyAspHis-115  
 144-SerAlaGluMetLeuArgArgTyrAspGluPheSerThrValLeu-158  
 195-LysArgLeuArgLeuPheThrGluAlaTrpGlnHis-206

**Antigenic Index - Jameson-Wolf**

1-MetTrpAspAsnAlaGluAlaMetGluArgLeuThr-12  
 33-AsnSerAsnHisLeuPro-38  
 42-ValSerLeuLysGly-46  
 50-TyrSerAspLysLysAlaLeu-56  
 67-AsnIleLeuArgThrAspIleAsnGlyAlaGlnGluAlaTyrArg-81

90-MetValArgArgArgPheProAspThrValGlu-100  
 103-LeuThrGluArgLysProValAlaArgTrpGly-113  
 116-AlaLeuValAspGlyGluGlyAsnValPhe-125

127-AlaArgLeuAspArgProGlyMetPro-135  
 138-ArgGlyAlaGluGlyThrSer-144

146-GluMetLeuArgArgTyrAspGlu-153

163-LeuGlyIleLysGlu-167

180-LeuAspAsnGlyIle-184  
 187-ArgLeuGlyArgGluAsnGluMetLysArgLeuArgLeu-199  
 207-LeuLeuArgLysAsnLysAsnArgLeuSer-216  
 220-MetArgTyrLysAspGlyPheSerVal-228  
 230-HisAlaProAspGlyLeuProGluLysGluSerGluGlu-242

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**Hydrophilic Regions - Hopp-Woods**

3-AspAsnAlaGluAlaMetGluArgLeuThr-12  
 50-TyrSerAspLysLysAlaLeu-56  
 69-LeuArgThrAspIleAsnGlyAlaGlnGluAlaTyrArg-81  
 90-MetValArgArgPheProAspThrVal-99  
 103-LeuThrGluArgLysProValAlaArgTrpGly-113  
 116-AlaLeuValAspGlyGluGlyAsnValPhe-125

127-AlaArgLeuAspArgProGly-133  
 138-ArgGlyAlaGluGlyThrSer-144

146-GluMetLeuArgArgTyrAspGlu-153

163-LeuGlyIleLysGlu-167  
 187-ArgLeuGlyArgGluAsnGluMetLysArgLeuArgLeu-199  
 208-LeuArgLysAsnLysAsnArgLeuSer-216  
 220-MetArgTyrLysAspGlyPheSer-227  
 230-HisAlaProAspGlyLeuProGluLysGluSerGluGlu-242

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**AMPHI Regions - AMPHI**

22-LysProValSerArgIleValThrAspSerArgAspIleArg-35  
 54-ValGlyGlyValLeuSer-59  
 78-AlaLeuLysValAspAsp-83

85-LeuAlaAlaLeuGlnThrLeuAlaLysAlaTrpArgAspAsn-98  
 116-LysGluMetLeuAlaAlaValLeuArg-124  
 130-AspAlaValSerAla-134

165-MetAsnHisPheGlyGluLeuAlaValLeuThrGlnIleAlaLys-179  
 186-AsnAsnAlaLeuArg-190  
 198-AspGlyValGlyAspIleAlaLysAla-206  
 303-LeuAsnAspValAlaGluGlyLeuGlnGlyPheSerAsn-315  
 345-AlaAlaValAspValLeuAlaArgMetPro-354  
 360-ValMetGlyAspMetGlyGluLeuGlyGlu-369  
 399-ValGluAlaAlaGlu-403

**Antigenic Index - Jameson-Wolf**

15-LeuProMetProSerGluAsnLysProValSer-25

27-IleValThrAspSerArgAspIleArgGluGlyAsp-38  
 44-AlaGlyGlyArgPheAspAla-50

67-ValSerArgGluAspCysAla-73  
 79-LeuLysValAspAspThrLeu-85  
 94-AlaTrpArgAspAsnValAsnProPhe-102  
 102-GlySerGlyGlyLysThrThrValLysGluMetLeu-119  
 123-LeuArgArgArgPheGlyAspAspAlaVal-132  
 138-AsnPheAsnAsnHisIle-143  
 151-LysLeuAsnGluLysHisArg-157  
 178-AlaLysProAspAla-182  
 194-GlyCysGlyPheAspGlyValGlyAspIleAlaLysSerGluIle-210  
 223-ProGlnGluAspAlaAsn-228  
 245-GlyValAspSerGlyAspValArgAlaGluAsnIleVal-257

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269-CysGlyAspGluArgThrAla-275  
 280-ValProGlyArgHisAsnVal-285  
 314-SerAsnIleLysGlyArgLeuAsnVal-322

330-ThrLeuIleAspAspThrTyrAsnAlaAsnProAspSerMetLysAlaAlaVal-347

363-AspMetGlyGluLeuGlyGluAspGluAlaAla-373  
 381-AlaTyrAlaArgAspGlnGlyIle-388  
 395-GlyAspAsnSerValGluAlaAlaGluLysPheGlyAla-407  
 425-AspLeuProGluArgAlaThrVal-432

434-ValLysGlySerArg-438

443-GluGluValValGluAlaLeuGluAspLys-452

#### **Hydrophilic Regions - Hopp-Woods**

17-MetProSerGluAsnLysProValSer-25  
 27-IleValThrAspSerArgAspIleArgGluGlyAsp-38  
 46-GlyArgPheAspAla-50

67-ValSerArgGluAspCysAla-73  
 79-LeuLysValAspAspThrLeu-85  
 94-AlaTrpArgAspAsnVal-99  
 109-SerGlyGlyLysThrThrValLysGluMetLeu-119  
 123-LeuArgArgArgPheGlyAspAspAlaVal-132  
 151-LysLeuAsnGluLysHisArg-157  
 178-AlaLysProAspAla-182  
 199-GlyValGlyAspIleAlaLysAlaLysSerGluIle-210  
 223-ProGlnGluAspAlaAsn-228  
 247-AspSerGlyAspValArgAlaGluAsnIleVal-257  
 269-CysGlyAspGluArgThrAla-275  
 316-IleLysGlyArgLeuAsnVal-322

335-ThrTyrAsnAlaAsnProAspSerMetLysAlaAlaVal-347  
 363-AspMetGlyGluLeuGlyGluAspGluAlaAla-373  
 381-AlaTyrAlaArgAspGlnGlyIle-388  
 397-AsnSerValGluAlaAlaGluLysPheGlyAla-407  
 425-AspLeuProGluArgAlaThrVal-432  
 443-GluGluValValGluAlaLeuGluAspLys-452

**g084-2**

**AMPHI Regions - AMPHI**  
 6-ArgIleLysAsnMetAspGlnThrLeuLysAsnThrLeuGly-19  
 21-CysAlaLeuLeuAla-25  
 48-AlaValGlyAlaLeuAla-53  
 65-PheProArgValSer-69  
 96-GlnIleValGlySerIleLeuGluSer-104  
 111-GluPheValGlyAsnLeuProGly-118

#### **Antigenic Index - Jameson-Wolf**

1-MetLysGlnSerAlaArgIleLysAsnMetAspGlnThrLeuLysAsnThr-17  
 40-TyrGluTyrGlyTyrArgTyrSer-47  
 102-LeuGluSerAsnProAlaGluAlaArgGluPheValGly-114

**Hydrophilic Regions - Hopp-Woods**

1-MetLysGlnSerAlaArgIleLysAsnMetAspGlnThrLeu-14  
 105-AsnProAlaGluAlaArgGluPheVal-113  
**g085-2**  
**AMPHI Regions - AMPhi**  
 41-GluArgValAlaGlnIleGlyLysMetPheAspGlyLeu-53  
 60-LeuLysAspAlaLeuAspAsnGlyPheAsp-69  
 90-AsnGlyGlyArgValLeuGlyAspIleGluLeuLeuAlaAspIle-104  
 125-ThrSerLeuValGlyTyr-130  
 141-IleAlaGlyAsnIleGlyThr-147  
 174-GluAsnThrGluSerLeu-179  
 191-GluAspHisLeuAspArgTyrAspAspLeuLeuAspTyr-203  
 213-GlyAspGlyValGln-217  
 225-PheCysArgAlaMetLysArgAlaGlyArgGluVal-236  
 275-HisAsnAlaAlaAsnValMetAlaAlaValAlaLeuCysGluAla-289  
 300-HisValLysThrPheGlnGlyLeuProHisArgValGluLysIleGly-315  
 336-AlaAlaIleAlaGlyLeu-341  
 353-GlyLysGlyGlnAspPheThr-359  
 394-ThrAspCysValThrLeuGluGluAlaValGlnThr-405  
 424-SerPheAspNetPheLysGlyTyr-431

**Antigenic Index - Jameson-Wolf**

4-GlnAsnLysIleLeu-9  
 23-TyrLeuArgLysAsnGlyAlaGluValAlaAlaTyrAspAlaGluLeuLysAlaGluArgValAlaGln-45  
 58-GlyArgLeuLysAspAlaLeuAspAsnGlyPhe-68  
 74-SerProGlyIleSerGluArgGlnProAspIleGluAlaPheLysGlnAsnGlyGlyArgValLeuGly-96  
 104-IleValAsnArgArgGlyAspLeu-112  
 116-ThrGlySerAsnGlyLysThrThr-123  
 150-LeuGluAlaGluLeuGlnArgGluGlyLysLysAlaAsp-162  
 159-SerSerPheGlnLeuLeuAsnThrGluSerLeuArgPrcThrAla-183  
 189-IleSerGluAspHisLeuAspArgTyrAspAspLeuLeu-201  
 204-AlaHisThrLysAlaGluIlePheArgGlyAspGlyVal-216  
 220-AsnAlaAspAspValPhe-225  
 228-AlaMetLysArgAlaGlyArgGluValLysArgPheSerLeuGluHisGluAla-245  
 251-ArgGlyThrGlyCysLeuLysGlnGlyAsnGluAspLeuIleSerThrGlnAspIlePro-270  
 291-GlyLeuProArgGluAlaLeu-297  
 307-LeuProHisArgValGluLysIleGlyGluLysAsnGly-319  
 322-PheIleAspAspSerLysGlyThrAsnVal-331  
 351-GlyMetGlyLysGlyGlnAspPheThrProLeuArgAspAlaLeuLysAspLysAlaLys-370  
 378-AspAlaProGlnIleArgArgAspLeuAspGlyCysGly-390  
 397-ValThrLeuGluGluAlaVal-403  
 431-TyrAlaHisArgSer-435

**Hydrophilic Regions - Hopp-Woods**

4-GlnAsnLysIleLeu-9  
 25-ArgLysAsnGlyAlaGlu-30  
 32-AlaAlaTyrAspAlaGluLeuLysAlaGluArgValAlaGln-45  
 59-ArgLeuLysAspAlaLeuAspAsnGlyPhe-68  
 77-IleSerGluArgGlnProAspIleGluAlaPheLysGlnAsnGlyGly-92  
 104-IleValAsnArgArgGlyAspLeu-112  
 118-SerAsnGlyLysThrThr-123  
 150-LeuGluAlaGluLeuGlnArgGluGlyLysLysAlaAsp-162  
 174-GluAsnThrGluSerLeuArgPro-181  
 189-IleSerGluAspHisLeuAspArgTyrAspAspLeuLeu-201

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204-AlaHisThrLysAlaGluIlePheArgGlyAspGly-215  
 228-AlaMetLysArgAlaGlyArgGluValLysArgPheSerLeuGluHisGluAla-245  
 251-ArgGlyThrGlyCysLeuLysGlnGlyAsnGluAspLeuIleSer-265  
 291-GlyLeuProArgGluAlaIle-297  
 309-HisArgValGluLysIleGlyGluLysAsnGly-319  
 324-AspAspSerLysGlyThrAsn-330  
 353-GlyLysGlyGlnAsp-357  
 359-ThrProLeuArgAspAlaLeuLysAspLysAlaLys-370  
 380-ProGlnIleArgArgAspLeuAspGly-388  
 397-ValThrLeuGluGluAlaVal-403  
 431-TyrAlaHisArgSer-435

**g086**

**AMPHI Regions - AMPHI**  
 55-MetArgThrTrpArgArgLeuValPro-63  
 83-IleAsnGlyAlaThrArg-88  
 99-ProThrGluLeuPheLysLeuAlaVal-107  
 120-GluValLeuArgSerMetGluSerLeuGlyTrpGlnSerIleTrpArgGlyThrAlaAsn-139  
 155-GluMetTyrGlyArgPhe-160  
 185-SerPheValValIle-189  
 228-ArgValGlnArgValValAlaPheLeuAspProTrpLysAspProGln-243  
 293-GlyPhePheGlyMetCys-298  
 336-TrpIleGlyIleGlnSerPhe-342

**Antigenic Index - Jameson-Wolf**

20-LeuAlaSerLysGluGlyGlyAsp-27  
 54-ArgMetArgThrTrpArgArg-60  
 79-AlaGlyArgGluIleAsnGlyAla-86  
 115-PheThrArgGluGluValLeuArgSerMetGlu-126  
 134-TrpArgGlyThrAla-138  
 144-AlaThrAsnProGlnAlaArgArgGluThrLeuGluMet-156  
 225-AlaProTyrArgVal-229  
 236-LeuAspProTrpLysAspProGlnGlyAla-245  
 265-GlyLeuGlyAlaSerLeuSerLysArgGlyPheLeu-276  
 313-SerIleGlyLysGlnSerArgAspLeuGly-322  
 352-LeuProThrLysGlyLeu-357  
 382-IleAspTyrGluAsnArgGlnLysMetArgGlyTyrArgValGlu-396

**Hydrophilic Regions - Hopp-Woods**

21-AlaSerLysGluGlyGlyAsp-27  
 79-AlaGlyArgGluIleAsnGly-85  
 115-PheThrArgGluGluValLeuArgSerMetGlu-126  
 147-ProGlnAlaArgArgGluThrLeuGluMet-156  
 238-ProTrpLysAspProGlnGly-244  
 270-LeuSerLysArgGlyPheLeu-276  
 316-LysGlnSerArgAspLeu-321  
 382-IleAspTyrGluAsnArgGlnLysMetArgGlyTyrArgValGlu-396

**g087**

**AMPHI Regions - AMPHI**  
 80-LysThrValArgGluAlaGlnArgIleIle-89  
 99-GlyPheGlyGlyPheValThrPheProGlyGlyLeuAlaAlaLysLeuLeu-115  
 129-GlyLeuSerAsnArgHisLeuSerArgTrpAlaLysArgValLeuTyrAlaPheProLys-148  
 157-ValGlyAsnProValArg-162  
 192-GlyAlaAspValLeuAsnLysThrVal-200  
 241-ValGluPheIleThrAspMetValSerAlaTyr-251  
 313-GluLysLeuAlaGluIleLeuGly-320

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330-TrpAlaGluAsnAla-334

**Antigenic Index - Jameson-Wolf**

25-AspSerLeuArgValArgGly-31  
 37-LeuGlySerLysAspSerMetGluGluArgIleValProGlnTyrGlyIle-53  
 61-LysGlyIleArgGlyAsnGlyIleLysArgLysLeu-72  
 80-LysThrValArgGluAlaGlnArgIleIleArgLysHisArgVal-94  
 130-LeuSerAsnArgHisLeuSerArgTrpAlaLys-140  
 150-PheSerHisGluGlyGlyLeu-156  
 159-AsnProValArgAlaAspIleSer-166  
 171-ProAlaGluArgPheGlnGlyArgGluGlyArgLeu-182  
 195-ValLeuAsnLysThrVal-200  
 207-LeuProGluGluValArgProGlnMetTyrHisGlnSerGlyArgAsnLysLeuGly-225  
 229-AlaAspTyrAspAla-233  
 235-GlyValLysAlaGluCys-240  
 249-SerAlaTyrArgAspAlaAsp-255  
 284-AlaValAspAspHisGlnThrAla-291  
 309-GlnLeuThrAlaGluLysLeuAlaGlu-317  
 321-SerLeuAsnArgGluLysCysLeuLys-329  
 332-GluAsnAlaArgThr-336  
 341-HisSerAlaAspAspValAlaGlu-348

**Hydrophilic Regions - Hopp-Woods**

25-AspSerLeuArgValArgGly-31  
 39-SerLysAspSerMetGluGluArgIleVal-48  
 66-AsnGlyIleLysArgLysLeu-72  
 81-ThrValArgGluAlaGlnArgIleIleArgLysHisArgVal-94  
 134-HisLeuSerArgTrpAlaLys-140  
 161-ValargAlaAspIle-165  
 171-ProAlaGluArgPheGlnGlyArgGluGlyArgLeu-182  
 207-LeuProGluGluValArgPro-213  
 219-SerGlyArgAsnLysLeu-224  
 235-GlyValLysAlaGluCys-240  
 249-SerAlaTyrArgAspAlaAsp-255  
 284-AlaValAspAspHisGlnThrAla-291  
 310-LeuThrAlaGluLysLeuAlaGlu-317  
 322-LeuAsnArgGluLysCysLeuLys-329  
 341-HisSerAlaAspAspValAlaGlu-348

**g088-2****AMPHI Regions - AMPHI**

7-HisPheSerAsnTrpLeuThrGlyLeuAsnIlePheGlnTyrThrThr-22  
 24-ArgAlaValMetAlaAlaLeu-30  
 43-ThrIleArgArgLeuThrAlaLeuLysCysGlyGln-54  
 88-LeuTrpGlyAsnTrpAlaAsn-94  
 111-GlyPheTyrAspAspTrpArgLysValValTyr-121  
 140-AlaValIleAlaGlyLeuAlaLeu-147  
 175-GlyPheLeuValLeuSerTyrLeuThrIle-184  
 187-ThrSerAsnAlaValAsnLeuThrAspGlyLeuAspGlyLeuAlaAla-202  
 221-HisTyrGlnPheSerGlnTyrLeuGlnLeuProTyr-232  
 244-ThrAlaMetCysGlyAlaCysLeuGlyPhe-253

**Antigenic Index - Jameson-Wolf**

48-ThrAlaLeuLysCysGlyGlnAlaValArgThrAspGlyProGln-62  
 66-ValLysAsnGlyThrProThrMet-73  
 114-AspAspTrpArgLysValValTyrLysAspProAsnGlyValSerAlaLysPhe-131

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193-LeuThrAspGlyLeuAsp-198  
 312-LysLysThrLysLysArgIle-318  
 328-TyrGluGlnLysGlyTrpLysGluThrGlnVal-338

**Hydrophilic Regions - Hopp-Woods**

56-ValArgThrAspGlyProGln-62  
 114-AspAspTrpArgLysValValTyrLysAspProAsnGlyVal-127  
 312-LysLysThrLysLysArgIle-318  
 331-LysGlyTrpLysGlu-335

**g089****AMPHI Regions - AMPHI**

40-PheSerThrArgCysGlyLysProTrpLysValLeu-51  
 74-LeuAlaAlaLeuCysLysProCysSerGlyMetSerCys-86  
 119-ArgProAlaArgPhe-123

**Antigenic Index - Jameson-Wolf**

1-MetProProLysIleThrLysSerGlyPhe-10  
 40-PheSerThrArgCysGlyLysProTrpLys-49  
 53-CysSerSerAsnAlaSerArgGlyLysProThrAlaSerHisLysAla-68  
 77-LeuCysLysProCysSerGlyMetSer-85  
 87-ValGluIleLysSerSerLeuProCysPheLysGlnProValProArgSerAsnGlnLysSerAlaSerCysS  
 erLysGluAsnArgPheThrSerArgProAlaArgPheMetAlaArgGlnAsnThrSerAlaPheLysThrCys  
 sThrProSerProArgLysIleSer-144

**Hydrophilic Regions - Hopp-Woods**

43-ArgCysGlyLysPro-47  
 56-AsnAlaSerArgGlyLysProThrAlaSerHisLysAla-68  
 87-ValGluIleLysSer-91  
 99-ProValProArgSerAsnGlnLysSerAlaSerCysSerLysGluAsnArgPheThrSerArgProAlaArgP  
 heMetAla-125  
 137-ThrProSerProArgLysIleSer-144

**g090-1****AMPHI Regions - AMPHI**

10-SerGlnSerLeuLysArgPheAspLysHisPheArg-21  
 51-ArgLeuAsnArgLeuPhe-56  
 59-AspAlaValGlyGlnVal-64  
 129-PheAlaValValAspGlu-134  
 141-AlaAspPhePheHisThrValArgGlnAla-150  
 152-GluGlyPheAspValPheGlnGlnCysPheAla-162  
 164-GlnThrAspGlyLeuAlaGln-170  
 177-ValGlyGlyValValGlnThrLeuGlnArg-186  
 233-ValValArgIleGlnAsnLeuHisSerIle-242  
 253-ValValGluGlnIle-257  
 388-GluThrValValGlnArgIlePheGlnThrThr-398  
 404-ProValLysIleLeuThrAspLeuArg-412  
 425-AsnLeuArgAlaValPheAlaGlnIleGlyAsnHisGlyAsnThrArgAlaAlaLysSer-444

**Antigenic Index - Jameson-Wolf**

8-ThrAlaSerGlnSerLeuLysArgPheAspLysHisPheArg-21  
 29-HisIleGluThrArgAlaGlyGlyAlaGluGlnAspAsnIleAla-43  
 51-ArgLeuAsnArgLeuPheGlnSerAspAlaVal-61  
 73-AlaAspLeuArgArgIleAspAlaAspGlnGluHis-84  
 94-AlaGlnGlyArgGluVal-99  
 107-GlnAsnHisGluGluArgValLeuGlnThrGlyAsnArgGlyGlyArgAlaAspIleArg-127  
 149-GlnAlaLeuGluGlyPhe-154

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161-PheAlaArgGlnThrAspGlyLeuAlaGlnSerHisGlySerHisAsnValGlyGly-179  
 183-ThrLeuGlnArgAspValLeuArgArgAsnGln-193  
 201-ThrAlaArgProAlaPheGlnPro-208  
 214-PheGlnGlyLysProPheHisPheThrProCysPro-225  
 268-ValHisIshisArgArgSerArgAlaGln-277  
 285-GluAlaGlyLysLeuGln-290  
 305-LeuGlnAsnArgArgThrAspIleAlaArgAsnAspGlyIleGlnPro-320  
 322-LeuAspAlaGluIleAlaAspGlnAlaArgTyrArgGly-334  
 339-AlaGlyAsnArgAsnIshis-344  
 353-ValArgGlnGlnPhe-357  
 369-GluArgLeuAspIle-373  
 379-AspAlaGlyThrGluArgGlnAsnIle-387  
 396-GlnThrThrArgValLysHisGlnProVal-405  
 407-HisLeuThrAspIleUrgHis-413  
 422-IleSerGlyAsnLeu-426  
 435-AsnHisGlyAsnThrArgAlaAlaLysSerGlyAspGluAspPhePhe-450

**Hydrophilic Regions - Hopp-Woods**

9-AlaSerGlnSerLeuLysArgPheAspLysHisPheArg-21  
 29-HisIleGluThrArgAlaGlyAlaGluGlnAspAsnIleAla-43  
 73-AlaAspLeuArgArgIleAspAlaAspGlnGluHis-84  
 94-AlaGlnGlyArgGluVal-99  
 107-GlnAsnHisGluGluArgValLeu-114  
 117-GlyAsnArgGlyGlyArgAlaAspIleArg-127  
 163-ArgGlnThrAspGlyLeuAla-169  
 184-LeuGlnArgAspValLeuArgArgAsnGln-193  
 269-HisHisArgArgSerArgAla-276  
 285-GluAlaGlyLysLeuGln-290  
 306-GlnAsnArgArgThrAspIleAlaArgAsnAspGlyIle-318  
 322-LeuAspAlaGluIleAlaAspGlnAlaArgTyrArg-333  
 369-GluArgLeuAspIle-373  
 380-AlaGlyThrGluArgGlnAsnIle-387  
 398-ThrArgValLysHisGlnPro-404  
 409-ThrAspIleUrgHis-413  
 437-GlyAsnThrArgAlaAlaLysSerGlyAspGluAspPhePhe-450  
 g091

**AMPHI Regions - AMPHI**

38-LysProLeuSerAspGlyIleAlaSerArgLeuIleThrArgLeu-52  
 61-ValLeuValSerValLeuThrSerLeuAlaLys-71

**Antigenic Index - Jameson-Wolf**

5-ValProProSerProAlaThr-11  
 28-IleLeuGlyArgArgArgProProLeuProLysProLeuSerAspGlyIleAla-45  
 73-LeuLeuSerGluArgLysValLeu-80

**Hydrophilic Regions - Hopp-Woods**

28-IleLeuGlyArgArgArgProProLeu-36  
 73-LeuLeuSerGluArgLysValLeu-80

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**AMPHI Regions - AMPHI**

55-GlyMetSerGlyIleAlaGluValLeuHis-64  
 76-AlaArgAsnAlaAlaThrGluHisLeu-84  
 95-HisThrAlaGluHisValAsnGly-102  
 122-AlaLeuGluArgGln-126  
 137-AlaGluLeuMetArgPheArgAsp-144

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209-LeuThrProIleMetSerValValThrAsnIleAsp-220  
 226-ThrTyrGlyHisSerValGluLysLeuHisGlnAlaPheIleAspPheIleHisArg-244  
 260-ValArgAlaIleLeuProLysValSerLysProTyr-271  
 273-ThrTyrGlyLeuAspAspThrAla-280  
 321-AsnValLeuAsnAlaLeuAlaAlaIle-329  
 339-ValGluAlaIleGlnLysGly-345  
 353-GlyArgArgPheGlnLysTyrGlyAspIleLys-363  
 407-ArgTyrThrArgThrArgAspLeuPheGluAspPheThrLysValLeuAsnThrValAspAlaLeu-428  
 449-LeuAlaArgAlaIleArgValLeuGlyLysLeu-459  
 464-CysGluAsnValAlaAspLeuProGlnMetLeuMetAsn-476

**Antigenic Index - Jameson-Wolf**

17-AlaAsnGlyGlnThrPhe-22  
 25-ThrProLeuArgThrAsnGlnProGluArgAsnIleMetMetLysAsnArgVal-43  
 70-ValSerGlySerAspGlnAlaArgAsnAlaAla-80  
 111-AlaValLysLysGluAsnProGluVal-119  
 121-AlaAlaLeuGluArgGlnIle-127  
 140-MetArgPheArgAspGlyIle-146  
 150-GlyThrHisGlyLysThrThrThr-157  
 184-GlyThrAsnAlaArgLeuGlyLysGlyGluTyr-194  
 198-GluAlaAspGluSerAspAla-204  
 218-AsnIleAspGluAspHisMetAspThrTyrGly-228  
 230-SerValGluLysLeuHis-235  
 255-ValAspSerGluHisVal-260  
 263-IleLeuProLysValSerLysProTyrAla-272  
 275-GlyLeuAspAspThrAlaAsp-281  
 286-AspIleGluAsnValGlyIla-292  
 302-MetLysGlyHisGluGlnGlySerPhe-310  
 351-GlyValGlyArgArgPheGlnLysTyrGlyAspIleLysLeuProAsnGlyGly-368  
 374-AspAspTyrGlyHisHisPro-380  
 393-AlaTyrProGluLysArgLeu-399  
 404-GlnProHisArgTyrThrArgThrArgAspLeuPheGluAspPheThrLys-420  
 435-AlaAlaGlyGluGluProValAlaAlaAlaAspSerArgAlaLeuAlaArg-451  
 478-LeuGlnAspGlyAspVal-483  
 488-GlyAlaGlySerIleAsnArgValProSerAla-498

**Hydrophilic Regions - Hopp-Woods**

26-ProLeuArgThrLysAsnGlnProGluArgAsnIleMetMetLysAsnArgVal-43  
 71-SerGlySerAspGlnAlaArgAsnAlaAla-80  
 111-AlaValLysLysGluAsnProGlu-118  
 121-AlaAlaLeuGluArgGlnIle-127  
 140-MetArgPheArgAsp-144  
 152-HisGlyLysThrThr-156  
 187-AlaArgLeuGlyLysGlyGlu-193  
 198-GluAlaAspGluSerAspAla-204  
 218-AsnIleAspGluAspHisMetAsp-225  
 230-SerValGluLysLeuHis-235  
 256-AspSerGluHisVal-260  
 275-GlyLeuAspAspThrAlaAsp-281  
 303-LysGlyHisGluGlnGlySer-309  
 351-GlyValGlyArgArgPheGlnLys-358  
 360-GlyAspIleLysLeu-364  
 393-AlaTyrProGluLysArgLeu-399  
 407-ArgTyrThrArgThrArgAspLeuPheGluAspPheThrLys-420  
 435-AlaAlaGlyGluGluProValAlaAlaAlaAspSerArgAlaLeuAlaArg-451

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479-GlnAspGlyAspVal-483

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**AMPHI Regions - AMPHI**

26-ThrAlaIleLeuAsn-30

59-ThrAlaPheAsnIleLeuHisGly-66

156-GlyArgLeuLysSerValTyrGluGluLeuLysHisLeu-168

196-IleHisIleIleProAlaThrGluPhe-204

254-PheLeuLysAspThr-258

267-IleAsnThrLeuProGlyMetThrGly-275

**Antigenic Index - Jameson-Wolf**

12-GlyGlyPheSerSerGluArgGluIleSerLeuAspSerGlyThr-26

32-LeuLysSerLysGlyIleAsp-38

41-AlaPheAspProLysGluThrProLeuSerGluLeuLysGluArgGlyPhe-57

66-GlyThrTyrGlyGluAspGlyAlaVal-74

96-GlyMetAspLysTyrArgCys-102

121-AspAspThrAspPheAspAlaValGluGluLysLeuGly-133

140-ProAlaAlaGluGlySerSer-146

151-LysVallysGluLysGlyArgLeuLysSerValTyrGluGluLeuLysHisLeuGln-169

176-ArgPheIleGlyGlyGlyGluTyrSer-184

189-AsnGlyLysGlyLeuPro-194

203-GluPheTyrAspTyrGluAlaLysTyrAsnArgAspAspAspThrIleTyrGlnCysProSerGluAspLeuThr

GluAlaGluGluSerLeuMetArg-234

245-GlyAlaGluGlyCysVal-250

253-AspPheLeuLysAspThrAspGly-260

269-ThrLeuProGlyMetThr-274

279-ValProLysSerAlaAla-284

**Hydrophilic Regions - Hopp-Woods**

15-SerSerGluArgGluIleSerLeu-22

32-LeuLysSerLysGlyIleAsp-38

41-AlaPheAspProLysGluThrProLeuSerGluLeuLysGluArgGlyPhe-57

68-TyrGlyGluAspGlyAlaVal-74

96-GlyMetAspLysTyrArgCys-102

121-AspAspThrAspPheAspAlaValGluGluLysLeuGly-133

140-ProAlaAlaGluGlySerSer-146

151-LysVallysGluLysGlyArgLeuLysSerValTyrGluGluLeuLysHisLeuGln-169

205-TyrAspTyrGluAlaLysTyrAsnArgAspAspThrIle-217

221-ProSerGluAspLeuThrGluAlaGluGluSerLeuMetArg-234

253-AspPheLeuLysAspThrAspGly-260

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**AMPHI Regions - AMPHI**

17-LeuProProIleThrLysValGlySer-25

64-ArgGlyIleThrGlyIleCysArg-71

80-PheSerPheLeuThrAlaVal-86

**Antigenic Index - Jameson-Wolf**

4-ProLeuProLysArgAlaLeu-10

24-GlySerSerProAlaAlaProArgMetGluAla-34

50-MetProSerArgLysArgIleSer-57

60-SerIleLysAlaArgGly-65

70-CysArgSerAsnAlaAlaThrThrSer-78

**Hydrophilic Regions - Hopp-Woods**

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5-LeuProLysArgAlaLeu-10  
 28-AlaIalaProArgMetGluAla-34  
 51-ProSerArgLysArgIleSer-57  
 60-SerIleLysAlaArgGly-65  
**g095-2**

**AMPHI Regions - AMPHI**

7-GlyGlyCysIleSerAsnLeuPheArgGlnPheGlnGlnArgGlyGlyAsnAlaValAsp-26  
 38-IleLeuXxxAsnIleHisGlnHisLeuArgGlnValGlyAspValPheAlaVal-55  
 63-TyrAlaAspSerThr-67  
 86-PheGlyGlnTyrGlnArgIleAsnGlyIleGluTyrPheGlyLysValPheLysGlnIleAlaArg-107  
 131-LysGlyCysArgHisPheAspGlyValValSer-141  
 174-PheLeuAspArgPheAsnArgCysAlaAspPheGlnArgHisAlaAspGlyCysGlnCysValGlnHisVal-197  
 204-GlnHisAspPheLys-208  
 236-AspValGlyGlyIleValGlnThrValSerSerIle-247  
 274-ThrValAspGluIleAspLysArgLeuMetGlnPhePheAspAlaVal-289  
 370-AsnGlyAspAlaValThrGluAlaHis-378  
 417-ValAsnValPheCysGly-422  
 435-MetLeuGlySerGlyIleSerArgLeuIleArgThrGly-447  
 451-AlaGlnIleValGlnAspPheGlyAspThrAlaHisAla-463

**Antigenic Index - Jameson-Wolf**

17-PheGlnGlnArgGlyGlyAsnAlaValAspAlaSerArgThrHisIle-32  
 62-GlnTyrAlaAspSerThrArgGlnGlyAlaGlyValGlyGlyAsnArg-78  
 112-ValArgLeuGluGlyGluHisGlnThr-120  
 126-AlaAlaCysSerGlyLysGlyCysArgHisPheAspGly-138  
 163-AlaAlaAlaAspAlaPheLysAlaGluGlnAlaPhe-174  
 176-AspArgPheAsnArgCysAlaAspPheGlnArgHisAlaAspGlyCysGln-192  
 205-HisAspPheLysArg-209  
 253-GlyGlnAsnArgAlaAspVal-259  
 263-AsnThrGlnLysGlyPheAlaVal-270  
 273-HisThrValAspGluIleAspLysArgLeu-282  
 299-AspIleGlyAsnAspGlyHisAsnArgGlyGlnMetXxxGluArgGlyIle-315  
 339-PheAlaAlaAspAsnGluSerGlyValGluSerCysArgAlaGluAspGlyGlyGlnAlaGlyGlyArg-362  
 364-PheAlaValArgThrGlyAsnGlyAspAlaValThr-375  
 384-GlnGlyAlaArgAsnAsnGlyAsnLeuProLeuGlnArgSerAspAsnPheGly-401  
 405-LeuAspGlyGlyArgGlyAsnAspAspIleArgThr-416  
 442-ArgLeuIleArgThrGlyAsnPheLys-450  
 455-GlnAspPheGlyAspThrAlaHisAlaAspAlaAlaAspThrAspLysMetAspVal-473

**Hydrophilic Regions - Hopp-Woods**

17-PheGlnGlnArgGlyGlyAsnAlaValAspAlaSerArgThrHisIle-32  
 65-AspSerThrArgGlnGlyAla-71  
 112-ValArgLeuGluGlyGluHis-118  
 128-CysSerGlyLysGlyCysArgHisPheAsp-137  
 163-AlaAlaAlaAspAlaPheLysAlaGluGlnAlaPhe-174  
 182-AlaAspPheGlnArgHisAlaAspGly-190  
 205-HisAspPheLysArg-209  
 273-HisThrValAspGluIleAspLysArgLeu-282  
 300-IleGlyAsnAspGlyHisAsnArgGlyGlnMetXxxGluArgGlyIle-315  
 339-PheAlaAlaAspAsnGluSerGlyValGluSerCysArgAlaGluAspGlyGlyGly-357  
 368-ThrAlaAsnGlyAspAlaValThr-375  
 384-GlnGlyAlaArgAsnAsnGly-390  
 394-LeuGlnArgSerAspAsn-399

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407-GlyGlyArgGlyAsnAspAspIleArgThr-416  
 461-AlaHisAlaAspAlaAlaAspThrAspLysMetAspVal-473  
**g096-2**

**AMPHI Regions - AMPHI**  
 19-GlyIlePheGluGluIleAspAlaHis-27  
 59-IleAsnGlyValValSerVal-65  
 112-GlnPhePheValAsnAlaPheGlnThrAlaPhePhePheAsp-125  
 161-GluLeuGlyAsnGlyXxx-166  
 172-AsnGlnPheAlaAla-176  
 188-ThrAlaAlaGlyIleGlyAsnAlaGln-196  
 228-XxxArgArgPheLeu-232

**Antigenic Index - Jameson-Wolf**  
 4-HisThrGlyGlnGly-8  
 22-GluGluIleAspAla-26

30-PheArgThrAspCys-34  
 74-LeuGlyCysGlyAspAspValTyrAla-82  
 88-ValGlnAspGlyAla-92  
 97-AlaAlaAspLysThrPheGlyAsn-104  
 133-AlaPheGlyArgArgLeuHisLysHisArgGlnThr-144  
 161-GluLeuGlyAsnGlyXxxSerGlnCysLeu-170  
 181-AlaAspGlyGlyGlyGlyAspThr-188  
 211-ThrValLysAspValGluCysArgLeuLysAla-221

**Hydrophilic Regions - Hopp-Woods**  
 22-GluGluIleAspAla-26

75-GlyCysGlyAspAspValTyr-81  
 97-AlaAlaAspLysThrPheGly-103  
 133-AlaPheGlyArgArgLeuHisLysHisArgGln-143  
 182-AspGlyGlyGlyGlyAspThr-188  
 211-ThrValLysAspValGluCysArgLeuLysAla-221  
**g097**  
**AMPHI Regions - AMPHI**  
 28-AlaGlyLeuThrThrPheLeuThrMetCysTyrIleVal-40  
 166-AlaThrLeuValGlyLeuGlyAspIleHisGlnProSerAlaLeuLeuAlaLeuPheGlyPheValMetVal  
 ValValLeu-192  
 207-ThrIleThrValIleAlaSerLeuMetGlyLeuAsnGluPheHisGlyValValGlyGluValProGlyIle  
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 242-LeuPheThrValSer-246  
 260-PheAspSerThrGlyThr-265  
 362-MetLeuArgSerAlaArgAspIle-369

**Antigenic Index - Jameson-Wolf**

1-MetAspIleSerLysG1ThrLeuLeu-9  
 16-LysAlaAsnGlyThrThrValArgThrGluLeu-26  
 125-LysValArgGluMetLeu-130  
 260-PheAspSerThrGly-264  
 277-ValAspGlyLysLeuProArgLeuLysArg-286  
 317-SerAlaGlyGlyArgThrGly-323  
 364-ArgSerAlaArgAspIleAspTrpAspAspMetThrGlu-376

410-LeuCysArgArgThrGlyAspValPro-418

**Hydrophilic Regions - Hopp-Woods**

1-MetAspIleSerLys-5  
 17-AlaAsnGlyThrThrValArgThrGluLeu-26  
 125-LysValArgGluMetLeu-130  
 279-GlyLysLeuProArgLeuLysArg-286  
 318-AlaGlyGlyArgThr-322  
 364-ArgSerAlaArgAspIleAspTrpAspAspMetThrGlu-376  
 410-LeuCysArgArgThrGlyAsp-416  
 g098

**AMPHI Regions - AMPHI**

33-AspGlnPheValGlyAspValAlaArg-41  
 62-ThrHisHisValHisArgMetGly-69

**Antigenic Index - Jameson-Wolf**

25-GlnGlnAspAlaAlaGlnAlaGlyAspGlnPheVal-36  
 53-AsnAlaAlaGluHisGlyHisAlaGly-61  
 67-ArgMetGlyMetCysArg-72  
 79-AsnHisThrAspArgGlnAla-85

**Hydrophilic Regions - Hopp-Woods**

26-GlnAspAlaAlaGlnAla-31  
 54-AlaAlaGluHisGlyHis-59  
 79-AsnHisThrAspArgGlnAla-85  
 g099

**AMPHI Regions - AMPHI**

6-SerMetMetArgLeuProAspIleVal-14  
 47-AlaPheValGluPheGlyGluGly-55  
 102-LysLeuValGluThrTyrAlaLysThr-110  
 114-TrpAlaGlyGlyLeuLys-119  
 135-ThrArgAsnMetAlaGlyProSerAsn-143  
 154-AlaAlaLysGlyLeuLysProTyrGluGluProSerAspGlyGln-169  
 178-AlaAlaIleThrSerCysThrAsnThrSerAsnProArgAsnVal-192  
 251-ThrCysAsnGlyMetSer-256  
 341-IleAspAlaIleValAlaGluTyr-348  
 350-LysProGlnGlnPheArgAspIle-357  
 371-ProSerProLeuTyrAspTrpArg-378  
 381-SerThrTyrIleArg-385  
 398-ArgThrLeuArgGlyMetArgProPro-406  
 443-AspPheAsnSerTyrAlaThr-449  
 468-PheAsnGluMetValArg-473  
 494-MetArgMetTrpGluAlaIleGluThrTyrMet-504  
 532-ArgLeuAlaGlyValGluAlaIle-539  
 541-AlaGluGlyPheGluArgIleHisArgThrAsn-551  
 575-GlyThrGluThrTyr-579

**Antigenic Index - Jameson-Wolf**

18-LeuThrGlyLysArgGlnAla-24  
 38-PheLeuArgLysGluArgValVal-45  
 53-GlyGluGlyAlaArgSer-58  
 60-SerIleGlyAspArgAlaThr-66  
 70-MetThrProGluPhe-74  
 94-ThrGlyArgAspAspAlaGlnValLysLeu-103

133-SerValThrArgAsnMetAlaGlyProSerAsnProHis-145  
 157-GlyLeuAlaLysProTyrGluGluProSerAspGlyGlnMetProAspGly-173  
 183-CysThrAsnThrSerAsnProArgAsnVal-192  
 201-AsnAlaAsnArgLeuGlyLeuLysArgLysProTrpVal-213  
 216-SerPheAlaProGlySerLysValAla-224  
 235-ProGluMetGluLysLeu-240  
 251-ThrCysAsnGlyMetSerGlyAlaLeuAspProLysIleGlnGlnGluIleIleAspArgAspLeuTyr-27  
 3  
 279-SerGlyAsnArgAsnPheAspGlyArgIleHisProTyrAlaLys-293  
 312-IleArgPheAspIleGluAsnAspVal-320  
 322-GlyValAlaAspGlyArgGlueIleArgLeuLysAspIleTrpProThrAspGluGluIleAsp-342  
 348-TyrValLysProGlnGlnPheArgAsp-356  
 361-MetSerAspThrGlyThrAlaGlnLysAlaProSerProLeuTyrAspTrpArgProMetSerThrTyrIle  
 ArgArgProProTyrTrp-390  
 394-LeuAlaGlyGluArgThrLeuArgGlyMetArgProProAlaIleLeuProAspAsnIleThrThrAspHis  
 IleSerProSerAsn-422  
 438-GlyLeuProGluGluAspAsnSerTyrAlaThrHisArgGlyAspHisLeuThr-456  
 463-AlaAsnProLysLeuPhe-468  
 471-MetValArgAsnGluAspGlySerValArgGlnGlySerLeuAlaArgValGluProGluGlyGlnThr-49  
 3  
 503-TyrMetAsnArgLysGlnPro-509  
 516-AlaAspTyrGlyGlnGlySerSerArgAspTrpAlaAlaLysGlyValArg-532  
 542-GluGlyPheGluArgIleHisArgThrAsnLeu-552  
 562-PheLysProGlyThrAsnArgHisThrLeuGlnLeuAspGlyThrGluThrTyrAspValValGlyGluArg  
 ThrProArgCysGly-590  
 595-IleHisArgLysAsnGlyGluThrValGlu-604  
 607-ValThrCysArgProAspThrAlaGluGlu-616

#### Hydrophilic Regions - Hopp-Woods

18-LeuThrGlyLysArgGlnAla-24  
 38-PheLeuArgLysGluArgValVal-45  
 53-GlyGluGlyAlaArg-57  
 60-SerIleGlyAspArgAlaThr-66  
 94-ThrGlyArgAspAspAlaGlnValLysLeu-103  
 157-GlyLeuAlaLysProTyrGluGluProSerAspGlyGlnMetPro-171  
 205-LeuGlyLeuLysArgLysProTrpVal-213  
 235-ProGluMetGluLysLeu-240  
 259-LeuAspProLysIleGlnGlnGluIleIleAspArgAspLeuTyr-273  
 282-ArgAsnPheAspGlyArgIle-288  
 312-IleArgPheAspIleGluAsnAspVal-320  
 324-AlaAspGlyArgGlueIleArgLeuLysAsp-333  
 335-TrpProThrAspGluGluIleAsp-342  
 363-AspThrGlyThrAlaGlnLysAlaPro-371  
 394-LeuAlaGlyGluArgThrLeuArgGlyMetArg-404  
 438-GlyLeuProGluGluAspPheAsn-445  
 450-HisArgGlyAspHis-454  
 471-MetValArgAsnGluAspGlySerValArgGln-481  
 485-AlaArgValGluProGluGlyGlnThr-493  
 503-TyrMetAsnArgLysGlnPro-509  
 518-TyrGlyGlnGlySerSerArgAspTrpAlaAlaLysGlyValArg-532  
 542-GluGlyPheGluArgIleHisArg-549  
 564-ProGlyThrAsnArgHis-569  
 574-AspGlyThrGluThr-578  
 580-AspValValGlyGluArgThrProArg-588  
 596-HisArgLysAsnGlyGluThrValGlu-604

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609-CysArgProAspThrAlaGluGlu-616  
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**AMPHI Regions - AMPHI**

26-ProAsnProThrAlaAsnLeuGlyAspGlyLeu-36  
 70-PheAspThrMetValLysAspLeuLeuGlyArgGlyTrpAsnIleIleAsnGlyIleAla-89  
 109-ThrAlaLysGlyIleGlySerAlaVal-117  
 128-LeuValPhePheGlyIleLeuAlaPheCys-137  
 144-LeuValAspArgPheThrGlyValLeu-152  
 155-GlyMetValLeuThr-159  
 207-AsnValSerSerLeuLeuLysTyrPheLys-216  
 221-LysValAlaLysSerIle-226  
 266-LeuAsnGluThrLeuSerLysPheAlaGlnThrGlyAspMetAspLysIleLeuSerLeuPheProTyr-28  
 8  
 300-LeuGlyLeuPheAspAsnIleAlaAspIlePheLysTrpAsnAsp-314  
 316-MetSerGlyArgGly-320  
 342-PhePheThrAlaIleGlyAla-348  
 374-GlyAlaGlyLysThrTyrLysVal-381

**Antigenic Index - Jameson-Wolf**

1-MetSerAlaLysThrProSerLeu-8  
 26-ProAsnProThrAlaAsnLeuGlyAspGlyLeu-36  
 62-ThrHisAsnProArgGlyAlaSer-69  
 77-LeuLeuGlyArgGly-81  
 106-GlyAspLeuThrAla-110  
 169-AlaAspAlaLysPro-173  
 179-ThrGlnAlaProValGlyThr-185  
 214-TyrPheLysGlyAspAlaProLysValAla-223  
 246-SerAsnLeuProArgAsnGluPhe-253  
 258-AlaAlaGluArgGlnLeu-263  
 274-AlaGlnThrGlyAspMetAspLys-281  
 311-LysTrpAsnAspSerMetSerGlyArgGlyThrLys-322  
 369-SerProGlnLysIleGlyAlaGlyLysThrTyr-379

**Hydrophilic Regions - Hopp-Woods**

1-MetSerAlaLysThr-5  
 62-ThrHisAsnProArgGlyAlaSer-69  
 169-AlaAspAlaLysPro-173  
 215-PheLysGlyAspAlaProLysValAla-223  
 247-AsnLeuProArgAsnGluPhe-253  
 258-AlaAlaGluArgGlnLeu-263  
 277-GlyAspMetAspLys-281  
 316-MetSerGlyArgGlyThrLys-322  
 371-GlnLysIleGlyAla-375  
**g105**

**AMPHI Regions - AMPHI**

11-TrpValGlyLeuGly-15  
 22-ValThrArgLeuLeuAsp-27  
 51-LysValTyrGlySerThrAlaGluLeuValArgAlaCys-63  
 74-AlaAlaValCysAspIleLeuAsnGlyValArgAspGlyLeu-87  
 97-ThrIleSerProThr-101  
 110-ValGluAlaAlaGlyGlyGlnPheAlaGluAlaProVal-122  
 143-AlaValLeuAsnProLeuGlnLysIlePheSer-153  
 162-PheGlyAspValGlyLysGlySer-169  
 176-AsnSerLeuLeuGlyIlePheGlyGluAlaTyr-186  
 203-IleValGluAlaIleGlyGlySerAla-211

249-LeuGluGlnAlaGlyAsnThrLeuProAlaValGlu-260  
 263-AlaAlaSerTyrArgLysAlaValGluAla-272

**Antigenic Index - Jameson-Wolf**

25-LeuLeuAspGlyGlyIleGlu-31  
 34-ValTyrAsnArgSerProAspLysThrAlaProIleSerAlaLysGlyAlaLysValTyrGlySer-55  
 81-AsnGlyValArgAspGlyLeuAla-88  
 96-SerThrIleSerProThrGluAsnLeuAla-105  
 121-ProValserGlySerValGlyProAlaThr-130  
 139-GlyGlySerGluAla-143  
 155-ValGlyLysLysThrPheHisPheGlyAspValGlyLysGlySerGly-170  
 196-PheGlyIleAspThrAspThrIleVal-204  
 210-SerAlaMetAspSerProMetPheGlnThrLysLysSerLeuTrpAlaAsnArgGluPheProPro-231  
 237-HisAlaSerLysAspLeuAsnLeuAlaValLysGluLeuGluGlnAlaGlyAsnThrLeuPro-257  
 264-AlaSerTyrArgLysAlaValGluAlaGlyTyrGlyGluGlnAspValSerGly-281

**Hydrophilic Regions - Hopp-Woods**

25-LeuLeuAspGlyGlyIle-30  
 37-ArgSerProAspLysThrAlaProIleSerAlaLysGlyAlaLys-51  
 81-AsnGlyValArgAspGlyLeuAla-88  
 164-AspValGlyLysGlySerGly-170  
 196-PheGlyIleAspThrAspThrIle-203  
 218-GlnThrLysLysSerLeuTrpAla-225  
 237-HisAlaSerLysAspLeuAsnLeuAlaValLysGluLeuGluGlnAlaGly-253  
 265-SerTyrArgLysAlaValGlu-271

273-GlyTyrGlyGluGlnAspVal-279  
 g109-2

**AMPHI Regions - AMPHI**

6-GlyThrTyrArgAspLeuHisArgProAlaSerGlu-17  
 53-LeuIleProAlaMetAlaGlyThrIleGly-62  
 143-GlyLeuLeuMetAla-147  
 154-IleMetAlaLysLeuThrSer-160  
 175-GlyThrThrGlyGlnValLysLysLeuPheSerTrpAlaGly-188  
 205-ValMetTyrAlaLeuLeuGluHisTrpLysLysArgTrpLeu-218  
 220-ValProLeuGlyCys-224  
 292-HisGlnValPheGlnLysIle-298  
 324-VaiGlySerIleLeuGly-329  
 334-ThrSerSerTrpGlyThr-339  
 465-AlaValGlyMetLeuProGlyIleProProPheLeuGluGlnPheLysSerLeu-482

**Antigenic Index - Jameson-Wolf**

1-MetGluLysHisAsnGlyThrTyrArgAspLeuHisArgProAlaSer-16  
 18-PheAlaThrArgAspGluTyrLeuGlu-26  
 32-MetGlnProLysArgTrpArgProAsnLeuProPheArgAspTyrArgPheGluTrp-50  
 76-LeuGlyLeuProAsp-80  
 107-ProGlyAlaAsnLeuProGlyThrHis-115  
 158-LeuThrSerAsnGlyVal-163  
 177-ThrGlyGlnValLysLys-182  
 243-AlaProGlyLeuProPro-248  
 254-TrpXXxC GlyGluAsnSerGlyTrpHis-262  
 299-SerTyrProGluLysThrAspLysVal-307  
 310-AsnIleAspAspThrMetThr-316

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350-ProIleProGlyGly-354  
 392-AlaGlyMetGluMetThrArgLysGlyLysThrThrGln-404  
 435-GlyCysLysGluArgSerAla-441

**Hydrophilic Regions - Hopp-Woods**

1-MetGluLysHisAsnGlyThrTyrArgAspLeuHisArgProAlaSer-16  
 18-PheAlaThrArgAspGluTyrLeuGlu-26  
 35-LysArgTrpArgPro-39  
 44-ArgAspTyrArgPheGluTrp-50  
 178-GlyGlnValLysLys-182  
 299-SerTyrProGluLysThrAspLysVal-307  
 311-IleAspAspThrMetThr-316  
 392-AlaGlyMetGluMetThrArgLysGlyLysThrThrGln-404  
 435-GlyCysLysGluArgSerAla-441  
 g111-2  
**AMPHI Regions - AMPHI**  
 6-ArgLeuProAsnLeuIleArgAlaLeu-14  
 58-ProSerProAlaLysIleGlnLysArgIleAspAspAspAlaLeuLysGluValAsnArgGlnMetSer-79  
 90-PheAsnGlnHisThrAlaGly-96  
 128-GlyProLeuValAsnLeuTrp-134  
 151-IleLysGlnAlaAlaSerTyrThrGly-159  
 170-AspTyrAlaSerLeu-174  
 183-LeuAspLeuSerSerIleAlaLys-190  
 209-TyrLeuValGluIleGlyGly-215  
 314-GluThrGluAlaLeu-318  
  
 320-LeuAlaGluGlnGlu-324

**Antigenic Index - Jameson-Wolf**

1-MetProSerGluThrArgLeuProAsnLeu-10  
 26-CysSerGluGlnThrAla-31  
 37-GlnGlyGluThrMetGly-42  
 49-TyrLeuSerAsnAsnArgAspLysLeuProSerProAlaLysIleGlnLysArgIleAspAspAspAlaLeuLysGluValAsnArgGlnMetSer-79  
 81-TyrGlnThrAspSerGluIleSerArgPheAsnGlnHisThrAlaGlyLysProLeuArgIleSerSerAspPhe-105  
 111-GluAlaValArgLeuAsnArg-117  
  
 135-GlyPheGlyProAspLysSerValThrArgGluProSerProGluGlnIleLysGln-153  
 164-IleLeuGlnGlnGlyLysAspTyrAlaSerLeuSerLysThrHisProLysAla-181  
 192-PheGlyValAspLysValAlaGlyGluLeuGluLysTyrGly-205  
 213-IleGlyGlyGluLeuHisGlyLysGlyLysAsnAlaHisGlyGluProTrpArgIleGlyIleGluGlnProAsn-237  
 250-LeuAsnAsnArgSerLeuAlaThrSerGlyAspTyrArg-262  
 264-PheHisValAspLysAsnGlyLysArgLeuSer-274  
 277-IleAsnProAsnAsnLysArgProIleSer-286  
 295-ValSerAspSerAlaMetThrAlaAspGlyLeuSer-306  
 314-GluThrGluAlaLeuArgLeuAlaGluGlnGluLys-325  
 332-ValArgAspLysAspGlyTyrArg-339  
 342-MetSerSerGluPhe-346

**Hydrophilic Regions - Hopp-Woods**

1-MetProSerGluThrArgLeu-7  
 26-CysSerGluGlnThrAla-31  
 51-SerAsnAsnArgAspLysLeuProSer-59  
 61-AlaLysIleGlnLysArgIleAspAspAlaLeuLysGluValAsnArgGln-77  
 82-GlnThrAspSerGluIleSerArg-89  
 97-LysProLeuArgIleSerSer-103  
 111-GluIalaValArgLeuAsnArg-117  
 137-GlyProAspLysSerValThrArgGluProSerProGluGlnIleLysGln-153  
 167-GlnGlyLysAspTyrAlaSer-173  
 175-SerLysThrHisPro-179  
 192-PheGlyValAspLysValAlaGlyGluLeuGluLysTyrGly-205  
 217-LeuHisGlyLysGlyLysAsnAlaHis-225  
 267-AspLysAsnGlyLysArgLeuSer-274  
 279-ProAsnAsnLysArgProIle-285  
 314-GluThrGluAlaLeuArgLeuAlaGluGlnGluLys-325  
 332-ValArgAspLysAspGlyTyrArg-339  
**g117-1**  
**AMPHI Regions - AMPHI**  
 6-ProIleGlnAspThrGlnSerAla-13  
 15-LeuGlnGluLeuArgGluTrpPheAspSerTyrCysAla-27  
 57-GlyGluProLeuProAspHis-63  
 69-GlnMetValAspGluLeuAspLeuLeu-77  
 79-AspAlaValAlaAlaThrLeuLeuAlaAspIleGlyArgTyr-92  
 104-CysAsnSerThrValAlaGluLeuValLysGlyValAspGluValGlnLysLeuThrHisPheAlaArgVal  
 AspSerLeu-130  
 145-LysMetLeuLeuAlaMet-150  
 170-PheLeuSerAsnAlaProAspSerProGluLys-180  
 216-GluProGluLysTyrArg-221  
 234-ArgLeuGluTyrIleGluAsnPheLeuAspIleLeuArg-246  
 260-GlyArgProLysHisIleTyrSerIleTyrLys-270  
 282-LeuPheAspIleArg-286  
 290-IleLeuValAspThrValProGluCysTyrThrLeuGlyIleValHisSerLeuTrpGlnProIlePro  
 GlyGluPheAspAspTyrIleAla-321  
 327-GlyTyrLysSerIleHisThr-333  
 351-AspMetHisGlnPheAsnGluPheGlyValAla-361  
 385-glnLeuLeuAspTrp-389  
 440-HisSerSerIleGlyAspArg-446  
 489-VallLysSerGlyIlysAlaIleGlyLysIleArgAlaTyr-501  
 504-glnGlnAsnAlaAsp-508  
 521-glnLeuAlaLysLeu-525  
 532-GlnGluLeuAlaGlu-536  
 539-GlyTyrLysLysProGluAspLeuTyrThr-548  
 557-AsnArgAlaIleGlnLysAlaCysGlyThrLeuAsnGluProPro-571  
 585-LysIleLysLysGlyGly-590  
 603-MetThrThrLeuAlaLysCysCysLysProAlaProProAspAspIleAlaGly-620  
 637-SerPheArgHisLeuAlaGluHisAlaProGluLysValLeuAspAla-652  
 679-ArgAspValSerAspAla-684  
 714-GlnValAsnAspLeuProArgValLeuAlaGlyLeuGlyAspValLysGlyValLeuSerValThrArg-73  
 6

**Antigenic Index - Jameson-Wolf**

5-SerProIleGlnAspThrGlnSerAlaThr-14  
 16-GlnGluLeuArgGluTrpPheAspSerTyrCysAlaAlaLeuProAspAsnAspLysAsnLeu-36  
 46-GluHisTyrProAla-50  
 52-AlaAlaThrProTyrGlyGluProLeuProAspHisPhe-64  
 70-MetValAspGluLeuAspLeuLeuPro-78  
 88-AspIleGlyArgTyrValProAspTrp-96  
 100-ValSerGluArgCysAsnSerThrVal-108  
 110-GluLeuValLysGlyValAspGluValGlnLys-120  
 125-AlaArgValAspSerLeuAlaThrProGluGluArgAlaGlnGlnAlaGluThrMetArg-144  
 162-AlaMetArgThrArgThr-167  
 173-AsnAlaProAspSerProGluLysArgAlaValAlaLysGluThrLeu-188  
 209-AspLeuGlyPheArgHisGlnGluProGluLysTyrArgGlu-222  
 227-LeuAspGluLysArgThrGluArgLeuGluTyr-237  
 245-LeuArgThrGluLeuLysLys-251  
 258-ValAlaGlyArgProLysHis-264  
 271-LysMetValLysLysLeuSerPhe-279  
 294-ThrValProGluCysTyr-299  
 311-ProIleProGlyGluPheAspAspTyrIleAlaAsnProLysGlyAsnGlyTyrLysSer-330  
 335-IleValGlyProGluGluLysGlyValGluValGlnIleArgThr-349  
 364-TrpArgTyrLysGluGlyLysGlyAspSerAlaTyrGluGlnLys-379  
 387-LeuAspTrpArgGluAsnMetAlaGluSerGlyLysGluAspLeuAlaAla-403  
 418-ThrProHisGlyLys-422  
 440-HisSerSerIleGlyAspArgCysArgGlyAlaLysValGluGly-454  
 461-ThrProLeuGluAsnGlyGlnArgValGluIleIleThrAlaLysGluGlyHisProSerValAsn-482  
 487-GlyTrpValLysSerGlyLysAlaIleGlyLys-497  
 502-IleArgGlnGlnAsnAlaAspThrValArgGluGluArgValGlnLeuAspLysGlnLeuAla-523  
 525-LeuThrProLysProAsnLeuGlnGluLeuAlaGlu-536  
 538-LeuGlyTyrLysLysProGluAspLeu-546  
 551-GlyGlnGlyGluIleSerAsnArgAlaIleGlnLysAlaCysGlyThrLeuAsnGluProProVal-573  
 582-LysGlnSerLysIleLysLysGlyGlyLysThr-592  
 596-IleAspGlyGluAspGlyLeu-602  
 608-LysCysCysLysProAlaProProAspAspIleAla-619  
 622-ValThrArgGluArgGlyIleSerValHisArgLysThrCysProSerPhe-638  
 644-HisAlaProGluLysValLeuAsp-651  
 667-IleGluIleArgAlaGlnAspArgSerGlyLeuLeuArgAspValSerAspAlaLeuAlaArgHisLysLeu-690  
 696-GlnThrGlnSerArgAspLeuGluAlaSerMet-706  
 710-LeuGluValLysGlnValAsnAspLeuProArg-720  
 726-GlyAspValLysGly-730

**Hydrophilic Regions - Hopp-Woods**

8-GlnAspThrGlnSer-12  
 16-GlnGluLeuArgGluTrpPhe-22  
 30-ProAspAsnAspLysAsnLeu-36  
 70-MetValAspGluLeuAspLeuLeuPro-78  
 100-ValSerGluArgCysAsnSerThr-107  
 110-GluLeuValLysGlyValAspGluValGlnLys-120  
 125-AlaArgValAspSer-129  
 131-AlaThrProGluGluArgAlaGlnGlnAlaGluThrMetArg-144

162-AlaMetArgThrArgThr-167  
 174-AlaProAspSerProGluLysArgAlaValAlaLysGluThrLeu-188  
 209-AspLeuGlyPheArgHisGlnGluProGluLysTyrArgGlu-222  
 227-LeuAspGluLysArgThrGluArgLeuGluTyr-237  
 245-LeuArgThrGluLeuLysLys-251  
 258-ValAlaGlyArgProLysHis-264  
 271-LysMetValLysLysLysLeuSerPhe-279  
 314-GlyGluPheAspAsp-318  
 323-ProLysGlyAsnGly-327  
 337-GlyProGluGluLysGlyValGluValGlnIleArgThr-349  
 365-ArgTyrLysGluGlyLysGlyAspSerAlaTyrGluGln-378  
 387-LeuAspTrpArgGluAsnMetAlaGluSerGlyLysGluAspLeuAlaAla-403  
 443-IleGlyAspArgCysArgGlyAlaLysValGluGly-454  
 463-LeuGluAsnGlyGlnArgValGluIleIleThrAlaLysGluGlyHisPro-479  
 489-ValLysSerGlyLysAlaLysGlyLys-497  
 505-GlnAsnAlaAspThrValArgGluGluGlyArgValGlnLeuAspLysGlnLeuAla-523  
 538-LeuGlyTyrLysLysProGluAspLeu-546  
 553-GlyGluIleSerAsn-557  
 582-LysGlnSerLysIleLysLysGlyGlyLys-591  
 596-IleAspGlyGluAspGlyLeu-602  
 608-LysCysCysLysProAlaProProAspAspIle-618  
 622-ValThrArgGluArgGlyIleSerValHisArgLysThrCysPro-636  
 644-HisAlaProGluLysValLeu-650  
 657-IleGluIleArgAlaGlnAspArgSerGlyLeuLeuArgAspValSerAspAlaLeuAlaArgHisLysLeu-690  
 697-ThrGlnSerArgAspLeuGluAlaSerMet-706  
 710-LeuGluValLysGlnValAsnAspLeuProArg-720  
 726-glyAspValLysGly-730  
**g118**  
**AMPHI Regions - AMPHI**  
 24-GlyLysTrpTyrAsp-28  
 57-IleProArgAspIle-61  
 65-IleGlyThrIleIleAspPheLeuMetValProAsn-76  
 94-IleHisGluArgTyrGluArgPheThrThrMetLeuArg-106

**Antigenic Index - Jameson-Wolf**  
 2-CysGluPheLysAspPheArgArgAsnIleProCys-13  
 15-GluGluTyrAspGluAsnSerPhe-22  
 24-GlyLysTrpTyrAspAspGlyValTrpAspAspGluGluTyrTrpLysLeuGluAsnAspLeuIleGluValA  
 rgArgLysTyrProTyrProMetAspIleProArgAspIle-61  
 86-ProTrpLeuProAspSerValGlyIleHisGluArgTyrGluArg-100  
 109-PheThrGluLysAspIleVal-115  
 119-PheAspTyrTyrAsnLysLys-125

**Hydrophilic Regions - Hopp-Woods**  
 2-CysGluPheLysAspPheArgArgAsnIleProCys-13  
 15-GluGluTyrAspGlu-19  
 30-GlyValTrpAspAspGluGluTyrTrpLysLeuGluAsnAspLeuIleGluValArgArgLysTyrProTyr-  
 53  
 96-GluArgTyrGluArg-100  
 109-PheThrGluLysAspIleVal-115  
 121-TyrTyrAsnLysLys-125  
**g120**  
**AMPHI Regions - AMPHI**

-710-

6-LysAsnIlePheSerAla-11  
 49-SerGlyAsnAlaTyrLysIleValSerThrIleLys-60  
 77-AsnThrLeuHisProAlaTyrTyrLysAspIleArgArg-89  
 142-IleThrAsnGlyLysLysLeuTyrSerValGlyGlyLeuAsnLysAlaGly-158  
 188-AlaProSerLeuAsnAsnIleProAla-196

**Antigenic Index - Jameson-Wolf**

35-SerGlySerTyrGly-39  
 45-ThrPheGluArgSerGlyAsnAlaTyrLys-54  
 68-PheGluSerGlyGlyThrValVal-75  
 83-TyrTyrLysAspIleArgArgGlyLysLeuTyrAla-94  
 97-LysPheAlaAspGlySerValThrTyrGlyLysAlaGlyGluSerLysThrGluGlnSerProLysAla-119  
 131-AlaAsnAspAlaLysLeuProProGlyLeuLysIleThrAsnGlyLysLysLeuTyrSer-150  
 153-GlyLeuAsnLysAlaGlyThrGlyLysTyrSerIleGlyGlyValGluThrGluValValLysTyrArgValArgGlyAspThrVal-183  
 199-glyTyrThrAspAspGlyLysThrTyr-207  
 218-GlyGlnAlaAlaLysPro-223

**Hydrophilic Regions - Hopp-Woods**

45-ThrPheGluArgSerGlyAsn-51  
 85-LysAspIleArgArgGlyLysLeuTyrAla-94  
 107-LysAlaGlyGluSerLysThrGluGlnSerProLysAla-119  
 131-AlaAsnAspAlaLysLeu-136  
 143-ThrAsnGlyLysLysLeuTyr-149  
 155-AsnLysAlaGlyThrGly-160  
 167-ValGluThrGluValValLysTyrArgValArgArgGlyAspAspThr-182  
 200-TyrThrAspAspGlyLysThrTyr-207  
 219-GlnAlaAlaLysPro-223  
 g121-1

**AMPHI Regions - AMPHI**

40-ProTyrProAspArgLeuArgArgLysLeu-49  
 68-GlnGluLeuSerArgLeuTyrAlaGlnThr-77  
 101-ThrValArgHisAlaPro-106  
 117-LeuProLeuLeuAlaGluLeuThrArgIlePheThrValGly-130  
 148-ProAlaPheHisGlu-152  
 167-IleGlyGlyIleAlaAsnIleSerVal-175  
 189-ProGlyAsnMetLeuMetAspAlaTrpThr-198  
 216-GlyAsnIleLeuProGlnLeuLeuGlyArgLeuLeuAlaHisPro-230  
 236-HisProLysSerThrGly-241  
 251-GluThrTyrLeuAsp-255  
 262-AspValLeuArgThrLeuSerArgPheThrAlaGlnThrValTrpAspAlaValSerHis-281  
 303-AlaAspLeuAlaGluCysPhe-309  
 341-IleAsnArgIleProGlySerPro-348

**Antigenic Index - Jameson-Wolf**

13-ThrSerMetAspGlyAlaAsp-19

23-ValArgMetAspGlyGlyLysTrpLeuGly-32

40-ProTyrProAspArgLeuArgArgLysLeuLeuAspLeuGlnAspThrGlyThrAspGluLeuHisArgSerAspMetLeuSer-67

85-GlnAsnLeuAlaProCysAsp-91  
 97-CysHisGlyGlnThrValArgHisAlaProGluHisGlyTyrSer-111  
 128-ThrValGlyAspHeArgSerArgAspLeuAlaAlaGlyGlyGlnGly-143

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154-LeuPheArgAspAspArgGluThrArgVal-163  
 186-AspThrGlyProGlyAsnMet-192  
 205-ProTyrAspLysAsnGlyAlaLysAlaAlaGlnGlyAsn-217  
 235-ProHisProLysSerThrGlyArgGlu-243  
 253-TyrLeuAspGlyGlyGluAsnArgTyrAspValLeuArgThrLeuSer-268  
 283-AlaAlaAspAlaArgGln-288  
 293-GlyGlyGlyIleArgAsnProValLeu-301  
 344-IleProGlySerProHisLysAlaThrGlyAlaSerLysProCysIle-359

**Hydrophilic Regions - Hopp-Woods**  
**13-ThrSerMetAspGlyAlaAsp-19**

41-TyrProAspArgLeuArgArgLysLeuLeuAspLeuGlnAspThrGlyThrAspGluLeuHisArgSerArgM  
 etLeuSer-67  
 101-ThrValArgHisAlaPro-106  
 131-AspPheArgSerArgAspLeuAlaAla-139  
 154-LeuPheArgAspAspArgGluThrArgVal-163  
 206-TyrAspLysAsnGlyAlaLysAlaAlaGln-215  
 235-ProHisProLysSerThrGlyArgGlu-243  
 254-LeuAspGlyGlyGluAsnArgTyrAspVal-263  
 283-AlaAlaAspAlaArgGln-288  
 345-ProGlySerProHisLysAlaThrGlyAlaSerLys-356  
**g122-1**  
**AMPHI Regions - AMPHI**  
 6-AsnIleHisLysThrPhe-11  
 42-ThrPheLeuArgCysLeuAsnAlaLeuGluMetProGlu-54  
 102-LeuGluAsnValMetGlu-107  
 126-LysLeuLeuGluLys-130  
 176-ProGluLeuValGlnAspValLeuAspAlaMetLysGluLeuAlaArgGluGly-193  
 227-ProLysGluLeuPheAspHisLeuLysHisGlu-237

**Antigenic Index - Jameson-Wolf**  
 5-ArgAsnIleHisLysThrPheGlyGluAsnThrIle-16  
 20-IleAspLeuAspValGlyLysGlyGln-28  
 34-GlyProSerGlySerGlyLysThrThr-42  
 51-GluMetProGluAspGlyGlnIleGluPheAspAsnAlaArgProLeuArgIleAspPheSerLysLysThrS  
 erLysHisAsp-78  
 81-AlaLeuArgArgLysSerGlyMet-88  
 96-PheProHisLysThrValLeu-102  
 114-GlyLysProAlaAlaGlnAlaArgGluGluAlaLeuLysLeuLeuGlu-129  
 131-ValGlyLeuGlyAspLysValAspLeuTyr-140  
 142-TyrGlnLeuSerGlyGlyGlnGlnArgValGlyIle-154  
 168-AspGluProThrSerAlaLeuAspProGluLeuVal-179  
 182-ValLeuAspAlaMetLysGluLeuAlaArgGluGlyTrp-194  
 216-MetAspGlyGlyVal-220  
 222-ValGluGlnGlySerProLysGluLeuPheAsp-232  
 234-LeuLysHisGluArgThrArgArgPheLeu-243

**Hydrophilic Regions - Hopp-Woods**  
 20-IleAspLeuAspValGlyLys-26  
 51-GluMetProGluAspGlyGlnIleGluPheAspAsnAlaArgProLeuArgIleAspPheSerLysLysThrS  
 erLysHisAsp-78  
 81-AlaLeuArgArgLysSerGly-87

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114-GlyLysProAlaAlaGlnAlaArgGluGluAlaLeuLysLeuLeuGlu-129  
 131-ValGlyLeuGlyAspLysValAsp-138  
 168-AspGluProThrSerAlaLeuAspProGluLeuVal-179  
 182-ValLeuAspAlaMetLysGluLeuAlaArg-191  
 224-GlnGlySerProLysGluLeuPheAsp-232  
 234-LeuLysHisGluArgThrArgArgPheLeu-243  
**g126-1**

**AMPHI Regions - AMPHI**  
 26-LeuLysGlnSerValArg-31  
 73-GlyCysGlnSerValGlnGluAla-80  
 112-PheGlnLeuValGluAla-117  
 143-LeuAspAlaGlyCysGln-148

150-LeuMetProTrpAlaAlaProIleGlyThrGlyLeuGlyAlaVal-164  
 213-SerGlyAspProValAsnMetAlaArgAlaPhe-223

**Antigenic Index - Jameson-Wolf**  
 7-GluThrPheProSerArgLeu-13  
 24-GluIleLeuLysGlnSerValArgThrAlaArg-34  
 41-SerLeuArgArgThrGlyCysGlyGluAlaHisGlyGlnGlyPhe-56  
 85-GlnMetAlaArgGluValPheGlu-92

99-GluIleGlyAspAspAspAspThrLeuGln-108  
 121-LeuIleLysAspGlyPheLysValLeu-129  
 141-ArgLeuLeuAspAlaGlyCys-147  
 171-IleLeuArgGluArgLeuProAspThrProLeu-181  
 209-AlaValSerArgSerGlyAspProValAsn-218  
 228-GluSerGlyArgLeuAlaPhe-234  
 237-GlyProValGluAlaArghrLysAlaGlnAlaSerThrProThrVal-252

**Hydrophilic Regions - Hopp-Woods**  
 24-GluIleLeuLysGlnSerValArgThrAlaArg-34  
 41-SerLeuArgArgThrGlyCysGlyGluAlaHis-52  
 85-GlnMetAlaArgGluValPheGlu-92

100-LeuIleGlyAspAspAspAspThrLeuGln-108  
 171-IleLeuArgGluArgLeuProAsp-178  
 210-ValSerArgSerGlyAspPro-216  
 228-GluSerGlyArgLeuAlaPhe-234  
 237-GlyProValGluAlaArgThrLysAlaGlnAla-247  
**g127**  
**AMPHI Regions - AMPHI**  
 6-MetLeuAsnThrTrpProAsp-12  
 22-GluSerValAlaAla-26  
 119-ValGlyAspTyrIleGluIle-125  
 135-IleAsnLeuLeuAsnThrLeuMet-142  
 147-ProAsnProLeuValGlyGlnLeuAla-155  
 206-LeuGluProLeuCysAlaPro-212  
 214-IleProAlaIleGlnArgTyrLeuGluAsnValGln-225  
 250-ArgIleIleValArgPheAlaSerProVal-259  
 268-AlaValMetAspGluPheLeuArgVal-276

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**Antigenic Index - Jameson-Wolf**

14-ValProIleArgAlaGluAlaAlaGlu-22  
 41-HisPheArgArgHisProAspPheGlyIleGluSerLysArgArgPheLeuVal-58  
 112-SerAlaThrGlnGlnTyrSerVal-119  
 126-AsnGlyLeuArgGlyArgValValAsp-134  
 169-HisProValArgArgAspAsnIleLeu-177  
 193-LeuAspSerAspGluAlaValCysArg-201  
 234-AlaAlaArgProArgValThrArgValProTyrAspAspLysAlaTyr-249  
 257-SerProValSerLysArgLeuGluIle-265  
 282-AsnHisProAlaGlySerGluThrLeu-290

**Hydrophilic Regions - Hopp-Woods**

14-ValProIleArgAlaGluAlaAlaGlu-22  
 42-PheArgArgHisProAspPheGlyIleGluSerLysArgArgPheLeuVal-58  
 126-AsnGlyLeuArgGlyArgValVal-133  
 170-ProValArgArgAspAsnIleLeu-177  
 193-LeuAspSerAspGluAlaValCysArg-201  
 235-AlaArgProArgValThrArgValProTyrAspAspLysAlaTyr-249  
 259-ValSerLysArgLeuGluIle-265  
 285-AlaGlySerGluThrLeu-290

g128-2

**AMPHI Regions - AMPHI**

43-AlaGlnThrHisThrGlyTrpAlaAsnThrValGluArgLeuThrGlyIleThrGluArgValGlyArgIleTrpGlyValValSerHisIleLeuAsnSerValVal-77  
 85-ValTyrAsnGluLeuMetProGluIle-93  
 102-GlnAspIleGluLeuTyrAsnArgPheLysThrIleLysAsnSerProGlu-118  
 166-PheSerGlnAsnValLeuAspAlaThrAsp-175  
 189-GlyIleProGluAspAla-194  
 218-HisTyrLeuAlaVal-222  
 231-LeuArgGluGlnIleTyr-236  
 245-GluLeuSerAsnAspGlyLysPheAspAsnThrAlaAsnIleAspArgThrLeuGluAsnAlaLeuLysThrAlaLysLeuGlyPheAsnTyrAlaGlu-279  
 286-MetAlaAspThrProGluGlnValLeuAsnPheLeuHisAspLeuAlaArgArgAla-304  
 313-AlaGluValLysAlaPhe-318  
 360-LysValLeuAlaGlyLeuPheAlaGlnIleLysLysLeuTyrGly-374  
 472-LeuHisHisLeuLeuThrGlnValAspGluLeu-482  
 496-GluLeuProSerGlnPhe-501  
 522-GlyGluProLeuProLysGluLeuPheAspLys-532  
 570-TrpGlnGlnValLeuAspSerVal-577  
 584-IleGlnProTyrAsnArgPheAlaAsnSerPheGlyHisIlePheAlaGlyGly-603  
 610-SerTyrAlaTrpAlaGlu-615  
 623-AlaAlaPheGluGluSerAspAsp-630  
 636-LysArgPheTrpGlnGluIleLeuAla-644  
 651-AlaAlaGluSerPheLysAlaPheArg-659

**Antigenic Index - Jameson-Wolf**

9-LeuGlyGluGluProArgPheAsnGlnIleLysThrGluAspIleLysProAlaVal-27  
 32-AlaGluAlaArgGly-36  
 43-AlaGlnThrHisThrGlyTrp-49  
 52-ThrValGluArgLeuThrGlyIleThrGluArgValGlyArgIleTrp-67  
 77-ValAspThrProGluLeu-82  
 100-IleGlyGlnAspIleGluLeuTyrAsnArgPheLysThrIleLysAsnSerProGluPhe-119  
 123-SerProAlaGlnLysThrLysLeuAspHisAspLeuArgAsp-136  
 140-SerGlyAlaGluLeuProProGluArgGlnAlaGluLeuAlaLysLeuGlnThrGluGlyAlaGlnLeu-16  
 2

165-LysPheSerGlnAsnVal-170  
 172-AspAlaThrAspAla-176  
 190-IleProGluAspAla-194  
 202-AlaGlnSerGluGlyLysThrGlyTyrLys-211  
 225-TyrAlaGlyAsnArgGluLeuArgGluGlnIle-235  
 242-ArgAlaSerGluLeuSerAsnAspGlyLysPheAspAsnThrAlaAsnIleAspArgThrLeuGluAsnAla  
 LeuLysThr-268  
 285-LysMetAlaAspThrProGluGln-292  
 300-LeuAlaArgArgAlaLysProTyrAlaGluLysAspLeuAlaGlu-314  
 316-LysAlaPheAlaArgGluHisLeuGlyLeuAlaAspProGlnProTrpAspLeu-333  
 335-TyrAlaGlyGluLysLeuArgGluAlaLysTyrAlaPheSerGluThrGluValLysLys-354  
 377-PheAlaGluLysThr-381  
 387-LysAspValArgTyrPheGluLeuGlnGlnAsnGlyLysThrIle-401  
 409-TyrAlaArgGluGlyLysArgGlyGlyAla-418  
 420-MetAsnAspTyrLysGlyArgArgPheAlaAspGlyThrLeu-434  
 447-ProProValGlyGlyLysGluAlaArgLeuSerHisAspGlu-460  
 478-GlnValAspGluLeuGlyVal-484  
 496-GluLeuProSerGln-500  
 516-SerAlaHisGluGluThrGlyGluProLeuPro-526  
 560-SerGluSerAspGluCysArgLeuLysAsn-569  
 575-AspSerValArgLysGluValAla-582  
 585-GlnProProGluTyrAsnArgPheAlaAsnSerPheGly-597  
 605-SerAlaGlyTyrTyrSerTyr-611  
 625-PheGluGluSerAspAspValAlaAlaThrGlyLysArgPheTrp-639  
 646-GlyGlySerArgSerAlaAlaGluSerPheLysAlaPheArgGlyArgGluProSerIle-665  
 669-LeuArgHisSerGlyPheAspAsnAlaAla-678

#### **Hydrophilic Regions - Hopp-Woods**

9-LeuGlyGluGluProArgPheAsnGlnIleLysThrGluAspIleLysPro-25  
 32-AlaGluAlaArgGly-36  
 52-ThrValGluArgLeuThrGlyIleThrGluArgValGly-64  
 77-ValAspThrProGluLeu-82  
 100-IleGlyGlnAspIleGluLeu-106  
 111-LysThrIleLysAsnSerProGlu-118  
 124-ProAlaGlnLysThrLysLeuAspHisAspLeuArgAsp-136  
 143-GluLeuProProGluArgGlnAlaGluLeuAlaLysLeuGlnThrGluGlyAlaGlnLeu-162  
 190-IleProGluAspAla-194  
 202-AlaGlnSerGluGlyLysThrGlyTyr-210  
 227-GlyAsnArgGluLeuArgGluGlnIle-235  
 242-ArgAlaSerGluLeuSerAsnAspGlyLysPheAspAsn-254  
 256-AlaAsnIleAspArgThrLeuGluAsnAlaLeuLysThr-268  
 285-LysMetAlaAspThrProGlu-291  
 300-LeuAlaArgArgAlaLysProTyrAlaGluLysAspLeuAlaGlu-314  
 316-LysAlaPheAlaArgGluHisLeuGly-324  
 335-TyrAlaGlyGluLysLeuArgGluAlaLysTyrAlaPheSerGluThrGluValLysLys-354  
 377-PheAlaGluLysThr-381  
 387-LysAspValArgTyr-391  
 396-GlnAsnGlyLysThr-400  
 409-TyrAlaArgGluGlyLysArgGlyGly-417  
 423-TyrLysGlyArgArgPheAlaAsp-431  
 449-ValGlyGlyLysGluAlaArgLeuSerHisAspGlu-460  
 478-GlnValAspGluLeuGly-483  
 516-SerAlaHisGluGluThrGlyGluProLeuPro-526  
 560-SerGluSerAspGluCysArgLeuLysAsn-569  
 575-AspSerValArgLysGluValAla-582

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625-PheGluGluSerAspAspValAlaAlaThrGly-635

647-GlySerArgSerAlaAlaGluSerPheLysAlaPheArgGlyArgGluProSerIle-665

**g130**

**AMPHI Regions - AMPHI**

16-ThrLeuValSerGlyIle-21

36-GlySerGlySerPheGly-41

56-GlnProValGlyGlnLeu-61

91-AsnValProAsnAlaPro-96

110-GlnGlyPheAspThrLeuPheGlnHisAlaLeuAsnGlyPheAsnAlaMet-126

171-ThrAlaSerAlaPro-175

204-PheGluAlaThrCysGln-209

211-CysHisGlyGlySerIleProGlyIlePro-220

234-LysGlyLysGluThr-238

245-GluGlyPheAsnAlaMet-250

**Antigenic Index - Jameson-Wolf**

1-MetLysGlnLeuArgAspAsnLysAlaGlnGlySer-12

35-AlaGlySerGlySerPheGlyAspValAspAlaThrGluAlaAlaThrGlnThrArgIleGlnProValG \*

ly-59

63-MetGlyAspGlyIleProValGlyGluArgGlnGlyGlu-75

87-AlaAlaAspSerAsnValProAsnAlaProLysLeuGluHisAsnGlyAspTrpAla-105

108-IleAlaGlnGlyPhe-112

126-MetProAlaLysGlyGlyAla-132

134-AspLeuThrAspGlnGluLeuLysArg-142

148-AlaAsnLysSerGlyGlySerPheProAsnProAspGluAlaAlaProAlaAspAsnAlaAlaSerGlyThr  
AlaSerAlaProAlaAspSerAlaAlaProAlaGluAlaLysAlaGluAspLysGlyAlaAla-192

197-GlyValAspGlyLysLysValPheGlu-205

221-GlyIleGlyLysLysAspAspTrpAlaProArgIleLysLysGlyLysGluThrLeuHis-240

251-ProAlaLysGlyGlyAsnAlaGlyLeuSerAspAspGluValLysAla-266

274-GlnSerGlyAlaLys-278

**Hydrophilic Regions - Hopp-Woods**

1-MetLysGlnLeuArgAspAsnLysAlaGlnGly-11

41-GlyAspValAspAlaThrThrGluAlaAlaThr-51

68-ProValGlyGluArgGlnGlyGlu-75

87-AlaAlaAspSerAsnVal-92

96-ProLysLeuGluHisAsnGly-102

127-ProAlaLysGlyGlyAla-132

134-AspLeuThrAspGlnGluLeuLysArg-142

156-ProAsnProAspGluAlaAlaProAlaAspAsnAlaAla-168

174-AlaPrcAlaAspAlaAlaProAlaGluAlaLysAlaGluAspLysGlyAlaAla-192

198-ValAspGlyLysLysValPheGlu-205

222-IleGlyLysLysAspAspTrpAlaProArgIleLysLysGlyLysGluThrLeuHis-240

251-ProAlaLysGlyGlyAsn-256

258-GlyLeuSerAspAspGluValLysAla-266

**g132-2**

**AMPHI Regions - AMPHI**

13-IleIleSerAlaLeuAlaVal-19

70-AlaThrCysMetAlaMetVal-76

92-IleArgGlnThrGlnGlnAlaProLysProValSerAsnThr-105

**Antigenic Index - Jameson-Wolf**

26-GlnHisGlyLysGlyAlaAspAla-33

38-GlySerGlySerGlySerAla-44

-716-

81-HisThrThrLysHisGlyLeuAspPheSerAsnIleArgGlnThrGlnGlnAlaProLysProValSerAsnT  
hrGluProSerAlaProValProGlnGlnGlnLys-116

**Hydrophilic Regions - Hopp-Woods**

28-GlyLysGlyAlaAspAla-33

93-ArgGlnThrGlnGlnAlaProLysProValSerAsnThrGluProSerAla-109

g134

**AMPHI Regions - AMPHI**

39-IleGlnSerAlaGlyThrVal-45

47-GlyLysLysThrGly-51

56-SerAspTrpMetAspIleGluLysGlnArg-65

83-ValAsnLeuLeuAspThrProGlyHis-91

97-AspThrTyrArgValLeuThrAlaVal-105

114-AlaAlaLysGlyValGlu-119

123-IleLysLeuLeuAsnValCysArg-130

142-LysTyrAspArgGluVal-147

149-AspSerLeuGluLeuLeuAspGluValGluAspIleLeuGln-162

176-LysAsnPheLysGlyValTyrHisIleLeu-185

201-HisGluPheAspIleValLysGlyIleAsnAsn-211

254-PheGlySerAlaIle-258

265-GluIleLeuAsnSerLeuIleAspTrpAlaPro-275

322-LysPheGluArgGlyMetLys-328

361-AspIleIleGlyIleProAsnHis-368

395-LeuPheArgSerValArgIleLys-402

404-ProLeuLysIleLysGln-409

411-GlnLysGlyLeuGlnGlnLeuGlyGlu-419

423-ValGlnValPheLysProMetSer-430

449-SerArgLeuAlaAsnGluTyr-455

481-AlaGluPheGluLysAlaAsn-487

515-ArgTrpProAspIle-519

**Antigenic Index - Jameson-Wolf**

4-GluIleLeuAspGlnValArgArgArgArgThrPhe-15

19-SerHisProAspAlaGlyLysThrThrLeuThr-29

43-GlyThrValLysGlyLysLysThrGlyLysPheAlaThr-55

57-AspTrpMetAspIleGluLysGlnArgGly-66

76-PheAspTyrLysAspHisThrVal-83

85-LeuLeuAspThrProGlyHisGlnAspPheSerGluAspThrTyrArg-100

113-AspAlaAlaLysGlyValGlu-119

129-CysArgLeuArgAspThrPro-135

140-MetAsnLysTyrAspArgGluValArgAspSerLeuGluLeuLeuAspGluValGluAsp-159

173-GlyMetGlyLysAsnPheLys-179

194-AlaGlyGlyGluArgLeuProHis-201

207-LysGlyIleAsnAsnProGluLeuGluGlnArgPheProLeu-220

223-GlnGlnLeuArgAspGluIleGluLeu-231

235-AlaSerAsnGluPheAsnLeu-241

274-AlaProAlaProLysProArgAspAlaThrMet-284

286-MetValGlyProAspGluProLysPhe-294

302-GlnAlaAsnMetAspProLysHisArgAspArgIleAla-314

317-ArgValCysSerGlyLysPheGluArgGlyMetLysMetLysHisLeuArgIleAsnArgGluIleAla-33

9

348-SerHisAspArgGluLeuAlaGluGluAlaTyrAla-359

365-IleProAsnHisGly-369

373-IleGlyAspSerPheSerGluGlyGluGln-382

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399-ValArgIleLysAsnProLeuLysIleLysGlnLeuGlnLysGlyLeuGlnGlnLeuGlyGluGluGlyAla-422  
 450-ArgLeuAlaAsnGluTyrGlyVal-457  
 459-AlaValPheAspSer-463  
 473-SerCysAspAspLysLysLeuAlaGluPheGluLysAlaAsnAla-488  
 503-AlaProAsnArgValAsnLeu-509  
 511-LeuThrGlnGluArgTrpProAspIleVal-520  
 523-GluThrArgGluHisSerVal-529

**Hydrophilic Regions - Hopp-Woods**

4-GluIleLeuAspGlnValArgArgArgArgThr-14  
 21-ProAspAlaGlyLys-25  
 43-GlyThrValLysGlyLysLysThrGlyLys-52  
 59-MetAspIleGluLysGlnArgGly-66  
 77-AspTyrLysAspHisThr-82  
 92-GlnAspPheSerGluAspThrTyr-99  
 113-AspAlaAlaLysGlyValGlu-119  
 129-CysArgLeuArgAspThrPro-135  
 142-LysTyrAspArgGluValArgAspSerLeuGluLeuLeuAspGluValGluAsp-159  
 194-AlaGlyGlyGluArgLeuProHis-201  
 212-ProGluLeuGluGlnArgPheProLeu-220  
 223-GlnGlnLeuArgAspGluIleGluLeu-231  
 277-ProLysProArgAspAlaThrMet-284  
 287-ValGlyProAspGluProLysPhe-294  
 305-MetAspProLysHisArgAspArgIleAla-314  
 319-CysSerGlyLysPheGluArgGlyMetLysMetLysHisLeuArgIleAsnArgGluIleAla-339  
 348-SerHisAspArgGluLeuAlaGluAlaTyrAla-359  
 376-SerPheSerGluGlyGluGln-382  
 399-ValArgIleLysAsnProLeuLysIleLysGlnLeuGln-411  
 417-LeuGlyGluGluGlyIle-422  
 473-SerCysAspAspLysLysLeuAlaGluPheGluLysAlaAsnAla-488  
 512-ThrGlnGluArgTrpPro-517  
 523-GluThrArgGluHisSerVal-529  
**g135-2**

**AMPHI Regions - AMPHI**

29-ThrIleThrArgGlnLeuAlaAlaLeu-37  
 85-GluTyrThrAlaAsnLeu-90  
 169-AspIleAspGlyLeuTyrThr-175  
 185-ValArgLeuAspLysIleGluHis-192  
 212-GlyMetLeuThrIle-217  
 236-LeuLysProAspSerLeuAlaGluAlaAlaGlu-246  
 284-AlaGluHisAlaLeuSer-289  
 300-IleAlaGlyIleGluGly-305

308-SerArgMetAspThrValThrValTyr-316

318-LysAlaThrLysGlnPro-323

**Antigenic Index - Jameson-Wolf**

1-MetLysTyrLysArgIleVal-7  
 14-SerIleThrArgSerAspGlySerLeuSerArgGlyLysIleGlnThrIle-30  
 60-GlyPheLysLysArgProValLysIleAlaAspLysGlnAlaSer-74  
 90-LeuSerSerAspGlyIle-95  
 105-AlaAspPheAlaAspLysArgArgTyrGlnAsnAlaGlyGly-118

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124-LeuGlnArgArgAlaIle-129  
 132-IleAsnGluAsnAspThrValSerValGluGluLeuLysIleGlyAspAsnAspThrLeu-151  
 176-GlyAsnProAsnSerAsnProAspAlaValArgLeuAspLysIleGluHisIleAsn-194  
 202-GlyGlySerGlySerAlaAsnGlyThrGly-211  
 215-ThrLysIleLysAla-219  
 224-AlaGluSerGlyVal-228  
 233-CysSerSerLeuLysProAspSerLeuAlaGluAlaAlaGluHisGlnAlaAspGly-251  
 257-ArgAlaLysGlyLeuArgThrGlnLysGln-266  
 271-TyrSerGluSerArgGlySerValTyrValAspGluGlyAlaGluHisAlaLeuSerGluGlnGlyLysSer  
 LeuLeu-296  
 305-GlyHisPheSerArgMetAspThr-312  
 317-SerLysAlaThrLysGlnProLeuGlyLysGlyArgVal-329  
 335-AlaAlaGluAspLeuLeuLysSerArgLysAlaLys-346  
 350-IleHisArgAspAspTrpIleSer-357

#### **Hydrophilic Regions - Hopp-Woods**

1-MetLysTyrLysArgIleVal-7  
 14-SerIleThrArgSerAspGlySerLeuSerArgGlyLysIle-27

60-GlyPheLysLysArgProValLysIleAlaAspLysGlnAlaSer-74  
 105-AlaAspPheAlaAspLysArgArgTyrGlnAsn-115  
 124-LeuGlnArgArgAlaIle-129  
 133-AsnGluAsnAspThrValSerValGluGluLeuLysIleGlyAspAsnAspThrLeu-151  
 178-SerAsnSerAsnProAspAlaValArgLeuAspLysIleGluHisIleAsn-194  
 215-ThrLysIleLysAla-219  
 236-LeuLysProAspSerLeuAlaGluAlaAlaGluHisGlnAlaAsp-250  
 257-ArgAlaLysGlyLeuArgThrGlnLys-265  
 272-SerGluSerArgGly-276

278-ValTyrValAspGluGlyAlaGluHisAlaLeuSerGluGlnGlyLys-293

306-HisPheSerArgMetAspThr-312  
 318-LysAlaThrLysGlnProLeuGlyLysGlyArgVal-329  
 335-AlaAlaGluAspLeuLeuLysSerArgLysAlaLys-346  
 351-HisArgAspAspTrp-355

**g136**

#### **AMPHI Regions - AMPHI**

61-AlaValAspValCysGlnArgValArgGlnPheGlyArgLysPheArgGlnLeuAlaPhe-80  
 100-HisHisGlyValLysGlnLeuPheLysArgPheIleIle-112  
 114-GlyPheLysProIleGlyArgHis-121  
 162-ArgHisCysGlnAsn-166  
 184-GlnHisPheGlyGlnPro-189  
 191-GluArgCysGlnPheVal-196

#### **Antigenic Index - Jameson-Wolf**

1-MetGluIleArgPhe-5  
 52-ArgPheValAspAspArgLeuProVal-60  
 64-ValCysGlnArgValArgGlnPheGlyArgLysPheArg-76  
 83-LeuGlnAlaAspAsn-87  
 113-GlyGlyPheLysProIleGlyArgHisAsnValGln-124  
 153-IleArgHisArgGlyCysPheHisArgHisCysGlnAsnGlnProPheAsp-170  
 173-ThrPheGlyGlyLysLeuArg-180  
 185-HisPheGlyGlnProValGluArg-192  
 198-ProAlaGlnGlnArgArgHisLysThr-206

#### **Hydrophilic Regions - Hopp-Woods**

1-MetGluIleArgPhe-5  
 52-ArgPheValAspAspArgLeuProVal-60  
 64-ValCysGlnArgValArgGlnPheGlyArgLysPheArg-76  
 199-AlaGlnGlnArgArgHisLysThr-206  
**g137**  
**AMPHI Regions - AMPHI**  
 24-LeuSerTyrIleLeuGlyPhe-30  
 49-ThrLysGluSerLeu-53  
 55-AspPheLeuThrTrpGly-60  
 78-PheSerAspTyrLeuAlaHisProLeuAspIlePheLysValTrpGluGlyGly-95  
 101-GlyPheLeuGlyValValIle-107  
 120-PheLeuLysLeuMetAspThrValAlaProLeuValPro-132  
 139-ArgIleGlyAsnPheIle-144  
 149-TrpGlyArgIleThrAspIleAsnAlaPhe-158  
 178-ProLeuTrpAlaGluTrpLeuGlnGlnTyr-187  
 190-LeuProArgHisProSerGlnLeu-197  
 232-TyrGlyValPheArgPheIleAlaGluPheAlaArgGlnProAspAspTyrLeuGly-250

**Antigenic Index - Jameson-Wolf**  
 36-LeuGlyArgArgArgIleAlaGln-43  
 48-PheThrLysGluSerLeuAspAsp-55  
 92-TrpGluGlyGlyMet-96  
 113-SerArgLysHisGlyIle-118  
 136-AlaSerGlyArgIle-140  
 166-AlaHistyrGluAspAlaGluAlaAlaAla-175  
 191-ProArgHisProSerGlnLeu-197  
 215-SerLysLysProArgProThrGlyGln-223  
 241-PheAlaArgGlnProAspAspTyrLeu-249  
 277-PheGlyMetLysLysGlnHis-283

**Hydrophilic Regions - Hopp-Woods**  
 37-GlyArgArgArgIleAla-42  
 48-PheThrLysGluSerLeuAsp-54  
 167-HisTyrGluAspAlaGluAlaAlaAla-175  
 216-LysLysProArgProThrGly-222  
 241-PheAlaArgGlnProAspAspTyr-248  
 278-GlyMetLysLysGlnHis-283  
**g138**

**AMPHI Regions - AMPHI**  
 21-ProTyrIleArgArgPheSerGlySer-29  
 74-AsnAlaMetLeuGluLysVal-80  
 85-GluPheValGlnGlyMet-90  
 109-ValAsnLysGluIleValSerMetIleAsnThrTyrGly-121  
 152-IleGlyGlnValGlyThrValGluSerIle-161  
 163-ThrGlyLeuValLysGlyLeu-169  
 199-GlyLysLeuAlaGluGluLeu-205  
 213-MetThrAsnIleAlaGlyValMetAspLysThrGlyAsnLeuLeuThrLysLeuThr-231  
 234-ArgIleAspGlyLeu-238  
 247-GlyMetLeuProLysIleAlaSerAlaValGluAlaAlaValAsn-261  
 276-AlaLeuLeuLeuGluIlePheThrAspAla-285

**Antigenic Index - Jameson-Wolf**  
 9-AlaAlaAspLysAlaArgIleLeu-16  
 23-IleArgArgPheSerGlySer-29  
 35-TyrGlyGlyAsnAlaMetThr-41

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43-ProAlaLeuLysGluGlyPheAla-50  
 68-GlyGlyGlyProGln-72  
 76-MetLeuGluLysValGlyLysLysGlyGluPhe-86  
 91-ArgValThrAspLysGluThrMetAsp-99  
 109-ValAsnLysGluIle-113  
 128-SerGlyArgAspAspHisPheIleLysAlaLysLysLeuLeuValAspThrProGlnAsnSerValAsp  
 IleGlyGln-154  
 159-GluSerIleAspThrGlyLeu-165  
 169-LeuIleGluArgGlyCysIle-175  
 182-GlyValGlyGluLysGlyGluAla-189  
 200-LysLeuAlaGluGluLeuAsnAlaGluLys-209  
 219-ValMetAspLysThrGlyAsnLeuLeuThrLysLeuThrProLysArgIleAspGlyLeuIleAla-240  
 259-AlaValAsnGlyValLys-264  
 269-IleAspGlyArgLeuProAsnAla-276  
 291-IleLeuGlyArgGlyGluAspAla-298

**Hydrophilic Regions - Hopp-Woods**

9-AlaAlaAspLysAlaArgIleLeu-16  
 43-ProAlaLeuLysGluGlyPheAla-50  
 76-MetLeuGluLysValGlyLysLysGlyGluPhe-86  
 91-ArgValThrAspLysGluThrMetAsp-99  
 109-ValAsnLysGluIle-113  
 128-SerGlyArgAspAspHisPheIleLysAlaLysLysLeuLeuValAspThrProGlnAsnSerValAsp  
 -151  
 183-ValGlyGluLysGlyGluAla-189  
 200-LysLeuAlaGluGluLeuAsnAlaGluLys-209  
 219-ValMetAspLysThrGly-224  
 230-LeuThrProLysArgIleAspGlyLeuIle-239  
 269-IleAspGlyArgLeu-273  
 293-GlyArgGlyGluAspAla-298  
**g140**

**AMPHI Regions - AMPHI**

10-TyrLeuAsnSerThr-14  
 32-PhePheLysAsnIleLysThr-38  
 45-SerLeuAspSerValGluLysThrAlaGly-54  
 68-AsnAlaAlaArgThrAlaSer-74  
 108-SerAlaThrProGluThrValGluThrAlaVal-118  
 137-AlaAlaAlaValGlnHisAlaAsnThrAlaAspGlyValArgIlePheAsnSerLeuAlaAlaThr-158  
 175-LeuLysAlaValSerAspGlyLeuAsp-183  
 189-LeuArgValIleAlaGln-194  
 266-IleGlyTyrLeuLysGlyLeuPheSerTyr-275  
 290-GluTyrAlaGluGlySer-295  
 303-LeuGlyAlaLeuGly-307  
 352-GlyThrLeuValGlyLeu-357  
 391-GlyGlyPheThrGlyAlaAla-397  
 425-AsnGlyTrpAsnGlyLeuAlaArg-432

**Antigenic Index - Jameson-Wolf**

1-MetSerAlaArgGlyLysGlyAlaGly-9  
 12-AsnSerThrGlyArgHisVal-18  
 25-LysIleGlyGlnAspTyrSerPhe-32  
 34-LysAsnIleLysThrAspGlyGlyLeu-42  
 47-AspSerValGluLysThrAlaGlySerGluGlyAspThrProSer-61  
 63-TyrValArgArgGlyAsnAlaAlaArgThrAlaSer-74  
 86-HisAlaAlaValGluGlnGlySerAsnLeuGlu-96

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102-LeuAspAlaSerGluSerSerAlaThrProGluThrValGlu-115  
 117-AlaValAlaAspArgThrAspMetProGlyIleArgLeuArgArgThrThrPhe-134  
 144-AsnThrAlaAspGlyValArg-150  
 160-TyrAlaAspSerAlaAlaAla-166  
 169-AspMetGlnGlyArgArgLeuLysAlaValSerAspGlyLeuAspHisAsnGlyThrGlyLeu-189  
 195-ThrGlnGlnLspGlyGlyThrTrpGluGlnGlyGlyValGluGlyLysMetArgGlySerThr-215  
 221-AlaAlaLysThrGlyGluAsnThrThr-229  
 236-IleArgArgSerThrTrpSerGluAsnSerAlaAsnAlaLysThrAspSerIle-253  
 259-IleArgHisAspValGlyAsp-265  
 274-SerTyrGlyArgTyrLysAsnSerIleSerArgSerThrGlyAlaAspGluTyrAlaGlu-293  
 315-AlaThrGlyAspLeuThrValGluGlyGlyLeuArgHisAspLeuLeuLys-331  
 333-AspAlaPheAlaGluLysGlySerAlaLeuGlyTrpSerGlyAsnSerLeuThrGluGlyThr-353  
 362-LeuSerGlnProLeuSerAspLysAlaVal-371  
 376-AlaGlyValGluArgAspLeuAsnGlyArgAspTyrAla-388  
 399-AlaThrGlyLysThrGlyAlaArgAsnMetProHisThrArgArgValAla-415  
 421-ValGluPheGlyAsnGlyTrp-427  
 434-SerTyrThrGlySerLysGlnTyrGlyAsnHisSerGly-446

**Hydrophilic Regions - Hopp-Woods**

1-MetSerAlaArgGlyLysGly-7  
 36-IleLysThrAspGly-40  
 47-AspSerValGluLysThrAlaGlySerGluGlyAspThr-59  
 63-TyrValArgArgGlyAsnAlaAlaArgThrAlaSer-74  
 86-HisAlaValGluGlnGlyGlySerAsnLeu-95  
 102-LeuAspAlaSerGluSerSerAlaThrProGluThrValGlu-115  
 117-AlaValAlaAspArgThrAspMetProGlyIleArgLeuArgArgThrThrPhe-134  
 144-AsnThrAlaAspGly-148  
 169-AspMetGlnGlyArgLeuLysAlaValSerAspGlyLeuAspHisAsnGlyThr-187  
 205-GlyGlyValGluGlyLysMetArgGlySerThr-215  
 223-LysThrGlyGluAsnThrThr-229  
 244-AsnSerAlaAsnAlaLysThrAspSer-252  
 259-IleArgHisAspValGlyAsp-265  
 277-ArgTyrLysAsnSerIleSerArgSerThrGlyAlaAspGluTyrAlaGlu-293  
 323-GlyGlyLeuArgHisAspLeuLeuLys-331  
 333-AspAlaPheAlaGluLysGlySer-340  
 364-GlnProLeuSerAspLysAlaVal-371  
 376-AlaGlyValGluArgAspLeuAsnGlyArgAspTyrAla-388  
 399-AlaThrGlyLysThrGlyAlaArgAsnMetProHisThrArgArgValAla-415  
 g141

**AMPHI Regions - AMPHI**

12-SerSerThrMetArgProIleGlyGluIle-21  
 32-IleGluProTyrGly-36  
 44-ProAlaGluAlaPheLysLeuPro-51  
 80-AlaAspAlaLeuArgHisIle-86  
 131-PheHisAlaIleGlyAla-136  
 139-AsnLeuLeuAlaIlaMetLeuAspAsn-147  
 174-GlnLeuArgAsnIleIleAspGlyMetGlyLysProValAspGlyValMetArgPro-192  
 212-AspIleSerAspLeuLysGluArgPheGly-221

244-AlaMetAlaAlaLeuLeuLysAspAlaIleLysProAsnLeu-257

259-GlnThrIleGluGlyThrPro-265  
 272-ProPheAlaAsnIleAlaHisGlyCysAsnSerValThrAlaThrArgLeuAlaLysHisLeuAlaAspTyr  
 Ala-296  
 330-AlaThrValArgAla-334

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351-LeuGluAlaLeuAlaLysGlyLeuProAsnLeuLeuLysHisIleSerAsnLeuLysAsnValPheGly-37  
 3  
 406-SerLeuThrGluValTrpGlyLys-413  
 420-AspLeuAlaArgLysValValAsnAlaIleAspAsnGln-432  
 473-IleIlaSerLeuGluLys-478  
 502-LeuGlyCysProGluGly-507  
 525-ValAlaLeuCysGlyAsnMetMetLysMetProGlyLeuProLysValProAlaAla-543

**Antigenic Index - Jameson-Wolf**

3-PheLysThrAspAlaGluThrAlaGlnSerSerThrMetArgProIleGly-19

27-LeuAsnValAspAsnIleGluProTyrGly-36

38-TyrLysAlaLysIleAsnProAlaGluAlaPheLysLeuProGlnLysGlnGlyArg-56  
 64-AsnProThrProAlaGlyGluGlyLysThrThr-74  
 81-AspAlaLeuArgHisIleGlyLysAspSerValIleAlaLeuArgGluProSerLeuGlyPro-101  
 105-ValLysGlyGlyAlaAlaGlyGlyGly-113  
 151-GlnGlyAsnGluLeuAsnIleAspProLysArgValLeuTrp-164

166-ArgValValAspMetAsnAspArgGlnLeuArgAsnIleIleAspGlyMetGlyLysProValAspGlyVal  
 MetArgProAspGlyPheAspIle-197  
 211-LysAspIleSerAspLeuLysGluArgPheGly-221  
 227-TyrAlaLysAspGlySerProValTyr-235

237-LysAspLeuLysAla-241  
 251-AspAlaIleLysProAsnLeu-257  
 287-ArgLeuAlaLysHisLeuAla-293  
 306-LeuGlyAlaGluLysPheCysAspIleLysCysArgLeuAlaGlyLeuLysProAspAla-325  
 335-LeuLysTyrAsnGlyGlyValGluArgAlaAsnLeuGlyGluGluAsnLeuGluAlaLeuAla-355  
 383-PheValSerAspSerAspAlaGluLeuAlaMetIleGluLysAlaCysAla-399

411-TrpGlyLysGlyGlyAlaGlyGlyAlaAspLeuAlaArgLysValValAsn-427

429-IleAspAsnGlnProAsnAsnPhe-436  
 444-LeuGlyIleLysAspLysIleArgAlaIleAla-454  
 458-TyrGlyAlaGluAspValAspPheSerAla-467  
 474-AlaSerLeuGluLysLeuGlyLeuAspLysMetPro-485  
 494-SerLeuSerAspAsnAlaLysLeu-501

503-GlyCysProGluGlyPhe-508  
 534-MetProGlyLeuPro-538  
 541-ProAlaAlaGluLysIleAspValAspGluHisGly-552

**Hydrophilic Regions - Hopp-Woods**

3-PheLysThrAspAlaGluThrAlaGln-11

38-TyrLysAlaLysIleAsnPro-44

46-GluAlaPheLysLeuProGlnLysGlnGlyArg-56  
 67-ProAlaGlyGluGlyLysThr-73  
 81-AspAlaLeuArgHisIleGlyLysAspSerValIleAlaLeuArgGluProSer-98  
 155-LeuAsnIleAspProLysArgValLeuTrp-164  
 166-ArgValValAspMetAsnAspArgGlnLeuArgAsnIleIle-179  
 181-GlyMetGlyLysProValAspGlyValMetArgProAspGlyPhe-195  
 211-LysAspIleSerAspLeuLysGluArgPheGly-221

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228-AlaLysAspGlySer-232  
 237-LysAspLeuLysAla-241  
 287-ArgLeuAlaLysHisLeuAla-293  
 306-LeuGlyAlaGluLysPheCysAspIleLysCysArgLeuAlaGlyLeuLysProAspAla-325  
 339-GlyGlyValGluArgAlaAsnLeuGlyGluGluAsnLeuGluAlaLeuAla-355  
 383-PheValSerAspSerAspAlaGluLeuAlaMetIleGluLysAlaCysAla-399

420-AspLeuAlaArgLysValValAsn-427  
 444-LeuGlyIleLysAspLysIleArgAlaIleAla-454  
 458-TyrGlyAlaGluAspValAspPheSerAla-467

474-AlaSerLeuGluLysLeuGlyLeuAspLysMetPro-485  
 541-ProAlaAlaGluLysIleAspValAspGluHisGly-552  
**g142**  
**AMPHI Regions - AMPHI**  
 26-ArgPheAlaAlaMetProAsnMetValGlyLys-36  
 44-GlyGlnProGlyLysMetPhe-50  
 100-AlaValThrProCysArg-105  
 107-ValCysArgAspAspMetAsn-113  
 118-GlyCysHisArgIleThrGluArgSerLeuLysSerPheLeuGlnIleArgHisPheSerProLeuAsnArg-141

**Antigenic Index - Jameson-Wolf**  
 37-ProLeuPheGlyArgGlnAlaGlyGlnProGlyLysMet-49  
 60-HisIleAspAlaGluAlaAlaValPheArgGlnAspArgAsnAspSerArgThrPro-78  
 83-HisHisGlyArgArgLeuValGlyAsnArgArgAsnArgArgHisCysAsnAlaValThrProCysArgThrV  
 alCysArgAspAspMetAsnAlaCysArgThrGlyCysHisArgIleThrGluArgSerLeuLys-128  
 137-SerProLeuAsnArgProLeuTyrLysAsnAlaAlaHisLysAlaSerProHis-154

**Hydrophilic Regions - Hopp-Woods**  
 42-GlnAlaGlyGlnPro-46  
 60-HisIleAspAlaGluAlaAlaValPheArgGlnAspArgAsnAspSerArgThr-77  
 84-HisGlyArgArgLeuValGlyAsnArgArgAsnArgArgHisCys-98  
 106-ThrValCysArgAspAspMetAsnAlaCysArg-116  
 121-ArgIleThrGluArgSerLeuLys-128  
 147-AlaAlaHisLysAlaSerPro-153  
**g144**  
**AMPHI Regions - AMPHI**  
 36-LeuGlyGlyIleValGlnGluPhe-43  
 45-ValLeuAlaAspGlyVal-50  
 58-PheAspAspAlaAlaSer-63  
 71-IleAsnLysGlnIleGlyArgValAlaGlyArg-81  
 144-TyrArgTyrLeuSerArgHis-150  
 170-GlyProAlaArgCysGlySerAlaTyrSerAlaGly-181  
 185-SerGlyArgCysArgLysThrAlaArgLeuAsnGlyPheArgArgProArgSer-202

**Antigenic Index - Jameson-Wolf**  
 1-MetSerAspThrProAlaThrArgAspPheGlyLeuIleAspGlyArgAla-17  
 23-LeuSerAsnArgArgGlyThr-29  
 47-AlaAspGlyValArgGluAsnPro-54  
 57-SerPheAspAlaAlaSerTyrAlaAspAsnProPheGlnIleAsnLysGlnIleGly-76  
 78-ValAlaGlyArgIleArgGlyAlaAla-86  
 88-AspIleAsnGlyArgThrTyrArgValGluAlaAsnGluGlyArgAsnAlaLeuHisGlyGlySerHis-110  
 120-ValAlaAlaAspGlyArgArgLeuSerGlnArg-130  
 136-ProLeuGlyArgGlyArgProAlaTyr-144

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146-TyrLeuSerArgHisArgAlaArgArgHisGlyValArgProAspAlaAlaHis-163  
 167-AlaGlyArgGlyProAlaArgCysGlySer-176  
 179-SerAlaGlyArgThrTyrSerGlyArgCysArgLysThrAlaArgLeuAsnGlyPheArgArgProArgSer  
 Ile-203

**Hydrophilic Regions - Hopp-Woods**

1-MetSerAspThrProAlaThrArgAsp-9  
 24-SerAsnArgArgGlyThr-29  
 48-AspGlyValArgGluAsnPro-54  
 57-SerPheAspAspAlaAlaSer-63  
 78-ValAlaGlyArgIleArgGlyAlaAla-86  
 89-IleAsnGlyArgThrTyrArgValGluAlaAsnGluGlyArgAsnAlaLeu-105  
 121-AlaAlaAspGlyArgArgLeuSerGln-129  
 138-GlyArgGlyArgProAla-143  
 148-SerArgHisArgAlaArgArgHisGlyValArgProAspAla-161  
 168-GlyArgGlyProAlaArgCys-174  
 182-ArgThrTyrSerGlyArgCysArgLysThrAlaArg-193  
 195-AsnGlyPheArgArgProArgSerIle-203  
**g146**

**AMPHI Regions - AMPHI**

20-GlnTyrGlyLeuPheAspPheMetProCys-29  
 34-ProLeuAspAsnPheProThrVal-41  
 95-LeuArgAlaCysAlaValIle-101  
 140-AlaArgArgMetArg-144  
 158-ArgHisGlnArgGlyPheAlaArg-165

**Antigenic Index - Jameson-Wolf**  
 13-IleAspHisAspLysValGluGln-20

29-CysLeuArgGlnProProLeuAspAsn-37  
 41-ValArgProAlaProPheGluAlaArgGlyLysHisValGluArgArgGlnAspLysAspThrAspSerPheArgGlnArgValAlaAsnLeuArgArgAlaLeu-76  
 86-AlaCysArgArgGlnArgIleHisAla-94  
 112-SerLeuLeuArgAspLysArgPhe-119  
 138-ArgArgAlaArgArgMetArgHisGlyAsnAla-148  
 155-GlnGlnProArgHisGlnArgGlyPheAla-164

166-AlaGlySerGlyArgAsnAspLysAspValAlaPheSerIle-179

193-ValSerGlnArgThr-197

**Hydrophilic Regions - Hopp-Woods**

13-IleAspHisAspLysValGluGln-20  
 44-AlaProPheGluAlaArgGlyLysHisValGluArgArgGlnAspLysAspThrAspSerPheArgGlnArgValAlaAsnLeuArgArgAlaLeu-76  
 86-AlaCysArgArgGlnArgIleHisAla-94  
 112-SerLeuLeuArgAspLysArgPhe-119  
 138-ArgArgAlaArgArgMetArgHisGlyAsn-147  
 156-GlnProArgHisGlnArgGlyPheAla-164  
 167-GlySerGlyArgAsnAspLysAspValAla-176  
**g148**

**AMPHI Regions - AMPHI**

25-AlaAspLysIleArgLysIleGluAsnTrpPro-35  
 49-GlnSerAlaGluTyrPheArgLeuLeuValAspLeu-60

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150-AlaGlyLeuGluLeuIleArgLysLeuGlyGlyGluIle-162  
 165-AlaAlaAlaIleLeuGluPheThrAspLeuGlnGlyGlyLysAsnIleArg-181

**Antigenic Index - Jameson-Wolf**

4-LysThrSerAsnLeu-8  
 24-LeuAlaAspLysIleArgLysIleGluAsnTrpProGlnLysGly-38  
 66-MetAspGlnLysIleAspIle-72  
 76-LeuAspAlaArgGly-80  
 97-ProIleArgLysLysGlyLysLeuPro-105  
 117-TyrGlyGluAlaAlaVal-122  
 124-IleHisThrAspAlaValLysProGlySerArg-134  
 153-GluLeuIleArgLysLeuGlyGlyGluIleValGlu-164  
 172-ThrAspLeuGlnGlyGlyLysAsnIleArgAlaSerGlyAlaPro-186  
 192-GlnAsnGluGlyCysMetLysGly-199

**Hydrophilic Regions - Hopp-Woods**

24-LeuAlaAspLysIleArgLysIleGluAsnTrpPro-35  
 66-MetAspGlnLysIleAspIle-72  
 97-ProIleArgLysLysGlyLysLeuPro-105  
 117-TyrGlyGluAlaAlaVal-122  
 124-IleHisThrAspAlaValLysProGlySer-133  
 153-GluLeuIleArgLysLeuGlyGlyGluIleValGlu-164  
 178-LysAsnIleArgAlaSerGly-184  
 195-GlyCysMetLysGly-199  
 g149

**AMPHI Regions - AMPHI**

72-AsnLeuGlyAspAlaLeuAspGlyValProGlyIle-83  
 101-ThrGlyArgArgIleLysValLeuAsnHisHisGlyGluThrGlyAspMet-117  
 135-GlnValGluIleLeuArgGlyProValThr-144  
 152-ValAlaGlyLeuValAsp-157  
 164-ProGluLysMetProGluAsn-170  
 184-AsnLeuGluLysLeu-188  
 220-TyrArgAsnLeuLysArgLeuProAspSerHis-230  
 345-PheProGlyPheGlu-349  
 366-AlaGlyAspAlaValGluAsnPhePheAsnAsn-376  
 389-ProIleGlyArgLeuLys-394  
 411-AlaIleProGluThrVal-416  
 472-GlnProLeuProAspLeuGlyAla-479  
 565-ArgPheGlyAsnTyrIleTyrAlaGln-573  
 576-AsnAspGlyArgGlyProLysSerIleGluAsp-586  
 627-ArgGlyArgLeuLysAsnLeuProSer-635  
 672-LeuThrAspArgIle-676

**Antigenic Index - Jameson-Wolf**

25-HisGluThrGluGln-29  
 40-GlyLysSerArgProArgAlaThrSerGly-49  
 55-ThrAlaSerAspLysIleIleSerGlyAspThrLeuArgGlnLysAla-70  
 97-IleArgGlyGlnThrGlyArgArgIleLysVal-107  
 109-AsnHisHisGlyGluThrGlyAspMetAlaAspPheSerProAspHis-124  
 137-GluIleLeuArgGlyPro-142  
 157-AspValAlaAspGlyValIleProGluLysMetProGluAsnGlyValSerGlyGluAlaGlyLeu-178  
 180-LeuSerSerGlyAsnLeuGluLysLeuThrSer-190  
 207-GlyLeuTyrArgLysSerGlyAspTyrAlaValProArgTyrArgAsnLeuLysArgLeuProAspSerHis  
 AlaAspSerGlnThrGly-236  
 244-GlyGluLysGlyPhe-248

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252-AlaTyrSerAspArgArgAspArgTyrGlyLeuProAlaHisSerHisGluTyrAspAspCysHisAla-27  
 4  
 281-SerLeuIleAsnLysArgArgTyrLeu-288  
 295-LeuThrGluGluAspIleAspTyrAspAsnProGlyLeu-307  
 309-CysGlyPheHisAspGlyAspGlyAlaHis-318  
 320-HisThrHisAsnGlyLysProTrpIleAspLeuArgAsnLysArgTyrGluLeuArgAlaGluTrpLysGln  
 ProPheProGly-347  
 354-HisLeuAsnArgAsnAspTyrHisHisAspGluLysAlaGlyAspAlaVal-370  
 374-PheAsnAsnLysThrHisAsnAlaArgIleGluLeuArgHisGlnProIleGlyArgLeuLysGlySerTrp  
 -397  
 402-LeuGlyGlnLysSerSerAla-408  
 413-ProGluThrValGln-417  
 421-LeuIleAspAsnAsnValArg-427  
 437-AlaAsnTrpAspPheThrLeuGluGlyGlyValArgValGluLysGlnLysAlaSerIleArgTyrAsp  
 LysAlaLeuIleAspArgGluAsnTyrTyrAsnGlnProLeuProAsp-476  
 506-SerHisGlnGluArgLeuProSerThrGlnGluLeuTyrAlaHisGly-521  
 531-ValGlyAsnLysHisLeuAsnLysGluArgSerAsnAsnIle-544  
 549-GlyTyrGluGlyAspArgTrpGln-556  
 562-TyrArgAsnArgPheGlyAsn-568  
 574-ThrLeuAsnAspGlyArgGlyProLysSerIleGluAspAspSerGluMetLysLeu-592  
 594-ArgTyrAsnGlnSerGlyAlaAspPheTyrGlyAlaGluGly-607  
 609-IleTyrPheLysProThrProArgTyrArgIle-619  
 621-ValSerGlyAspTyrValArgGlyArgLeuLysAsnLeuProSerLeuProGlyArgGluAspProTyrGly  
 LysArgProPhe-648  
 651-GlnAlaAspGlnAsnAlaProArgIleProAla-661  
 670-ThrSerLeuThrAspArgIleAspAlaAsnLeuAspTyr-682  
 689-AsnLysLeuIleArgTyrGluThrArgThrProGlyHis-701  
 707-GlyAlaAsnTyrArgArgAsnThrArgTyrGlyGluTrp-719  
 725-AlaAspAsnLeuLeu-729  
 739-PheLeuSerAspThrProGlnMetGlyArgSerPheThrGlyGlyVal-754

**Hydrophilic Regions - Hopp-Woods**

25-HisGluThrGluGln-29  
 40-GlyLysSerArgProArgAlaThr-47  
 55-ThrAlaSerAspLysIleIleSer-62  
 64-AspThrLeuArgGlnLysAla-70  
 100-GlnThrGlyArgArgIleLysVal-107  
 112-GlyGluThrGlyAspMetAlaAspPheSerPro-122  
 157-AspValAlaAspGlyLysIleProGluLysMetProGluAsnGlyValSerGly-174  
 181-SerSerGlyAsnLeuGluLysLeuThr-189  
 207-GlyLeuTyrArgLysSerGlyAsp-214  
 219-ArgTyrArgAsnLeuLysArgLeuProAspSerHisAlaAspSerGlnThr-235  
 253-TyrSerAspArgArgAspArgTyrGly-261  
 267-HisGluTyrAspAspCysHisAla-274  
 295-LeuThrGluGluAspIleAspTyrAspAsn-304  
 312-HisAspGlyAspGlyAlaHis-318  
 330-LeuArgAsnLysArgTyrGluLeuArgAlaGluTrp-341  
 354-HisLeuAsnArgAsnAspTyrHisHisAspGluLysAlaGlyAspAlaVal-370  
 377-LysThrHisAsnAlaArgIleGluLeuArgHis-387  
 391-GlyArgLeuLysGly-395  
 446-GlyGlyValArgValGluLysGlnLysAlaSerIleArgTyrAspLysAlaLeuIleAspArgGluAsnTyr  
 -469  
 506-SerHisGlnGluArgLeuProSer-513  
 535-HisLeuAsnLysGluArgSerAsnAsn-543  
 550-TyrGluGlyAspArgTrp-555

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562-TyrArgAsnArgPhe-566  
 575-LeuAsnAspGlyArgGlyProLysSerIleGluAspAspSerGluMetLysLeu-592  
 603-TyrGlyAlaGluGly-607  
 613-ProThrProArgTyrArgIle-619  
 624-AspTyrValArgGlyArgLeuLysAsn-632  
 637-ProGlyArgGluAspProTyrGlyLys-645  
 652-AlaAspGlnAsnAlaProArg-658  
 671-SerLeuThrAspArgIleAspAla-678  
 690-LysLeuAlaArgTyrGluThrArgThrProGly-700  
 709-AsnTyrArgArgAsnThrArgTyrGly-717  
**g150**

**AMPHI Regions - AMPHI**  
 60-GlyGlulleLeuAspLeuLeu-66  
 87-LeuLeuSerHisPheGlu-92  
 100-PheValLysGlyTyrAla-105  
 132-IleAlaGlyValLeuHisArgPheProAlaLysLeuThrAla-145  
 147-GlnPheAlaGlyLeuLeuArgProLeuAla-156  
 235-GlyValAlaProPheArg-240  
 272-ThrGluTrpGlnGlnPheAlaLys-279  
 304-IleArgGluGlnAla-308  
 327-AlaAlaLysMetAlaLysGluValGluAlaAlaLeuLeuAspValIleIleGly-344

**Antigenic Index - Jameson-Wolf**  
 2-TerTyrCysLysAlaAspProPhePro-10  
 17-GlnLysIleThrAlaArgGlnSerAspLysAspValArgHisIleGluIleAspLeuSerGlySerAspLeu-40  
 43-LeuProGlyAspAla-47  
 52-PheAspAsnAspProAlaLeuVal-59  
 69-AsnProAlaThrGluIleGlnAlaGlyGlyLysThrLeu-81  
 93-LeuThrGlnAsnThrProAlaPhe-100  
 108-AlaAspAsnAspGluLeuAspArgIleAlaAla-118  
 163-SerSerSerGlnAlaGluAlaGlyAspGluValHis-174  
 181-ArgPheGluHisGluGlyArgAlaArgAlaGlyGlyAlaSerGlyPhePhe-197  
 199-AspArgLeuGluGluAspGlyThrVal-207  
 210-PheAlaGluArgAsnAspGlyPheArgLeuProGluAspSerArgLysPro-226  
 231-GlySerGlyThrGly-235  
 245-GlnArgAlaAlaGluAsnAlaGluGlyArgAsn-255  
 276-GlnPheAlaLysAspGlyPheLeuHisArgTyrAspPheAlaTrpSerArgAspGlnGluGluLysIleTyr-  
 Val-300  
 302-AspLysIleArgGluGlnAlaGlu-309  
 326-AspAlaAlaLysMetAlaLysGluValGlu-335  
 345-AlaGlyHisSerAspGluAspGlyAlaGluGlyTyr-356  
 359-MetLeuArgGluGluLysArgTyrGlnArgAspValTyr-371

**Hydrophilic Regions - Hopp-Woods**  
 18-LysIleThrAlaArgGlnSerAspLysAspValArgHisIleGluIleAspLeuSerGly-37  
 72-ThrGluIleGlnAlaGlyGlyLys-79  
 108-AlaAspAsnAspGluLeuAspArgIleAlaAla-118  
 165-SerGlnAlaGluAlaGlyAspGluValHis-174  
 181-ArgPheGluHisGluGlyArgAlaArgAlaGlyGly-192  
 199-AspArgLeuGluGluAspGlyThrVal-207  
 210-PheAlaGluArgAsnAspGlyPheArgLeuProGluAspSerArgLysPro-226  
 246-ArgAlaAlaGluAsnAlaGluGlyArg-254  
 290-TrpSerArgAspGlnGluGluLysIleTyrVal-300  
 302-AspLysIleArgGluGlnAlaGlu-309

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326-AspAlaAlaLysMetAlaLysGluValGlu-335  
 346-GlyHisSerAspGluAspGlyAlaGluGlyTyr-356  
 359-MetLeuArgGluGluLysArgTyrGlnArgAspValTyr-371  
 g151

**AMPHI Regions** - AMPHI  
 6-AsnIleAlaIleIleAla-11  
 22-AspGlnLeuLeuArg-26  
 73-AspThrProGlyHis-77  
 81-GlyGlyGluValGluArgValLeuGlyMetValAspCysVal-94  
 128-LysIleAspLysPro-132  
 144-PheGlyLeuPheAspAsnLeuGlyAlaThr-153  
 165-SerGlyLeuSerGlyPheAlaLysLeuGluGluThrAspGlu-178  
 182-MetArgProLeuPheAspThrIleLeuLysTyrThr-193  
 248-GlyArgIleAsnGlnLeuLeuGlyPheLysGlyLeuGluArgVal-262  
 273-ValIleIleSerGlyIleGlu-279  
 330-IleArgAspArgLeuGlnLysGluLeu-338  
 348-AspThrAlaAspAla-352  
 396-CysGluProTyrGluAsnLeuThrValAsp-405  
 457-LeuThrArgGlyValGly-462  
 464-MetSerHisValPheAsp-469  
 537-LysGlyLysLysLeuThrAsnIle-544  
 551-GluAlaValArgLeuThrThr-557

**Antigenic Index** - Jameson-Wolf

1-MetLysGlnIleArg-5  
 13-ValAspHisGlyLysThrThrLeu-20  
 24-LeuLeuArgGlnSerGlyThrPheArgAlaAsnGlnGlnValAspGluArgValMetAspSerAsnAspLeuGluLysGluArgGlyIle-53  
 59-AsnThrAlaIleAspTyrGluGlyCysHis-68  
 72-ValAspThrProGlyHisAlaAspPheGlyGlyGluValGluArg-86  
 99-AspAlaGlnGlyProMetProGlnThrArgPheValThr-112  
 128-LysIleAspLysProSerAlaArgProSerTrp-138  
 151-GlyAlaThrAspGluGlnLeuAsp-158  
 171-AlaLysLeuGluGluUthrAspGluSerSerAspMetArgProLeu-185  
 193-ThrProAlaProSerGlySerAlaAspGluProLeu-204  
 211-LeuAspTyrAspAsnTyrThrGly-218  
 226-LeuAsnGlyArgIleLysProGlyGln-234  
 241-HisGluGlnIleAla-246  
 257-LysGlyLeuGluArgValProLeuGluGluAlaGluAlaGlyAsp-271  
 277-GlyIleGluAspIleGly-282  
 287-IleThrAspLysAspAsnProLysGlyLeuPro-297  
 300-SerValAspGluProThrLeu-306  
 314-ThrSerProLeuAlaGlyThrGluGlyLysPheValThrSerArgGlnIleArgAspArgLeuGlnLysGluLeuLeu-339  
 344-LeuArgValGluAspThrAlaAspAlaAspValPheArgValSerGlyArgGlyGluLeu-363  
 371-AsnMetArgArgGluGlyTyr-377  
 381-ValGlyLysProArgValValTyrArgAspIleAspGlyGlnLysCysGluProTyrGluAsnLeuThrValAspValProAspAspAsnGlnGlyAlaValMetGluGluLeuGlyArgArgGlyGluLeuThrAsnMetGluSerAspGlyAsnGlyArgThrArgLeuGluTyr-440  
 467-ValPheAspAspTyrAlaProValLysProAspMetProGlyArgHisAsnGly-484  
 489-GlnGluGlnGlyGlu-493  
 501-AsnLeuGluAspArgGlyArgMetPheValSerProAsnAspLysIleTyr-517  
 524-IleHisSerArgAspAsnAspLeu-531  
 535-ProLeuLysGlyLysLysLeuThrAsnIleArgAlaSerGlyThrAspGluAlaValArg-554  
 569-PheIleAspAspAspGluLeuValGlu-577

579-ThrProGlnSerIleArgLeuArgMet-587  
 591-SerGluLeuGluArgArgArgHisPheLysLysLeuAsp-603

**Hydrophilic Regions - Hopp-Woods**

1-MetLysGlnIleArg-5  
 29-GlyThrPheArgAla-33  
 35-GlnGlnValAspGluArgValMetAspSerAsnAspLeuGluLysGluArgGlyIle-53  
 60-ThrAlaIleAspTyrGluGly-66  
 80-PheGlyGlyGluValGluArg-86  
 99-AspAlaGlnGluGlyProMetPro-106  
 128-LysIleAspLysProSerAla-134  
 151-GlyAlaThrAspGluGlnLeuAsp-158  
 171-AlaLysLeuGluGluThrAspGluSerSerAspMetArgProLeu-185  
 198-GlySerAlaAspGluProLeu-204  
 226-LeuAsnGlyArgIleLysPro-232  
 241-HisGluGlnGlnIleAla-246  
 258-GlyLeuGluArgValProLeuGluGluAlaGluAlaGlyAsp-271  
 277-GlyIleGluAspIleGly-282  
 287-IleThrAspLysAspAsnProLysGly-295  
 300-SerValAspGluProThrLeu-306  
 318-AlaGlyThrGluGlyLysPheValThr-326  
 328-ArgGlnIleArgAspArgLeuGlnLysGluLeuLeu-339  
 344-LeuArgValGluAspThrAlaAspAlaAspValPheArgValSerGlyArgGlyGluLeu-363  
 371-AsnMetArgArgGluGlyTyr-377  
 381-ValGlyLysProArgValValTyrArgAspIleAspGlyGlnLysCysGluProTyrGlu-400  
 405-AspValProAspAspAsnGlnGlyAlaValMetGluGluLeuGlyArgArgArgGlyGluLeuThrAsnMet  
 GluSerAspGlyAsnGlyArgThrArgLeu-438  
 472-AlaProVallysProAspMetProGlyArgHis-482  
 489-GlnGluGlnGlyGlu-493  
 502-LeuGluAspArgGlyArgMet-508  
 512-ProAsnAspLysIleTyr-517  
 525-HisSerArgAspAsnAspLeu-531  
 536-LeuLysGlyLysLysLeuThrAsn-543  
 545-ArgAlaSerGlyThrAspGluAlaValArg-554  
 569-PheIleAspAspAspGluLeuValGlu-577  
 583-IleArgLeuArgMet-587  
 591-SerGluLeuGluArgArgArgHisPheLysLysLeuAsp-603  
**g152**  
**AMPHI Regions - AMPHI**  
 10-PheProThrArgLeuPhe-15  
 66-ArgPheSerArgPheValArgGlyTrpAlaGlyIleArgGlyTyrLeuLysAsnGlyIleProGluHisIleG  
 1nProGlyHisAsnProLeu-96  
 103-AlaLeuLeuAlaAla-107  
 130-LeuAsnHisLeuValSerGluHisThrGlySerLeu-141  
 150-PheLysLeuLeuAlaValPheSerAlaValHisIleAlaAlaValAlaAlaTyr-167  
 177-ArgProMetIleThr-181

**Antigenic Index - Jameson-Wolf**

1-MetLysAsnLysThrLysValTrp-8  
 29-SerAlaLysAlaGlyGlyAsp-35  
 61-GlySerAspThrAlaArgPhe-67  
 79-GlyTyrLeuLysAsnGlyIleProGluHisIleGlnProGlyHisAsnProLeu-96  
 119-AlaAsnGluAsnThrPheSerThrAsnGlyTyr-129  
 137-HisThrGlySerLeuIleArg-143  
 169-IlePheLysLysLysAsnLeuVal-176

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186-IleGluGlyLysThrSerIle-192

**Hydrophilic Regions - Hopp-Woods**

1-MetLysAsnLysThrLysVal-7  
 63-AspThrAlaArgPhe-67  
 169-IlePheLysLysLysAsnLeuVal-176  
 186-IleGluGlyLysThrSerIle-192

g153

**AMPHI Regions - AMPHI**

17-AlaAlaSerValLeuSerLeuProGluMetMetArgLeuMetValPhe-32  
 96-ThrLeuValAlaTyrIleLysLeuSerSerValAlaLys-108  
 130-ValSerValProGlnHisTrp-136  
 224-ThrIlePheSerGlyIleAlaTyr-231  
 274-AlaLysLysLeuSerHisLeuTyrArgIleThrGluAlaValGlyArgTrpSerMetIleAspIlePheVal  
 Ile-298

**Antigenic Index - Jameson-Wolf**

65-IleArgLysGlnAla-69  
 81-ValArgLeuArgGln-85  
 143-ArgLeuThrGlyAsnAsnAla-149  
 151-GlnThrAlaSerGluGlyLysThrCysCysSer-161  
 165-TyrPheArgAspSerIleGluSerProCysGly-175  
 181-LeuTyrGlyGlyArgProLysSerLeuSer-190  
 215-SerAsnProIleAlaThrGlu-221  
 234-AspGluGlyAspArgLeu-239  
 272-AlaGlyAlaLysLysLeu-277  
 339-LeuLeuTrpAspLysArgAlaSerAspGlyIleAla-350  
 352-AsnGluThrGluLysTyrAsp-358

**Hydrophilic Regions - Hopp-Woods**

81-ValArgLeuArgGln-85  
 152-ThrIleSerGluGlyLysThrCysCys-160  
 168-AspSerAlaGluSerPro-173  
 182-TyrGlyGlyArgProLysSerLeuSer-190  
 234-AspGluGlyAspArgLeu-239  
 273-GlyAlaLysLysLeu-277  
 339-LeuLeuTrpAspLysArgAlaSerAsp-347  
 352-AsnGluThrGluLysTyrAsp-358

g154

**AMPHI Regions - AMPHI**

122-GlyValThrGlyLeuGlyThrLeuLeu-130  
 152-GlnAspIleProProValThr-158  
 262-ThrLysAsnSerLysAsnValLysSer-270  
 298-PheLysGlnSerVal-302  
 360-SerLysGluHisTrpLysGlnGlnPheGlnThrAlaLeuAsnLysGlyLeuThrAla-378  
 389-GlyLysMetIleGluLeuAsnAsp-396  
 429-LysLeuAlaAspLeuLeuAspLysPheAsnAsnLeuPro-441  
 446-ValAlaGluLeuAsnGly-451  
 467-LeuSerSerIleAspLysLeuValGlyAsnProGlnThrGlnAsnIleProAsnGluLeuAsnGlnThr-48  
 9  
 506-IleTyrGlyAspValGlnAsnThrLeuGlnSerLeuAspLysThrLeuLysAspValGlnProValIleAsn  
 ThrLeuLysGluLys-534

**Antigenic Index - Jameson-Wolf**

1-MetThrAspAsnSerProProAsnGlyHisAlaGlnAlaArgValArgLysAsnAsnThr-21

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43-LysGluIleArgAsnArgGlyProVal-51  
 57-AspSerAlaGluGlyIleGluValAsnAsnThr-67  
 75-AspValGlyArgValThrArgIleLysLeuArgAspAspGlnLysGlyValGlu-92  
 100-AspValSerGlyLeuIleArgSerAspThrGln-110  
 114-ValllysProArgIleAspGlnSerGly-122  
 138-ThrProGlyLysSerGlyGluAlaLysAspValPheGln-150  
 169-LeuIleGlyLysAsnAspArgIleLeuAsn-178  
 196-AlaHisPheAspProSerAspGlnSer-204  
 212-GlnSerProAsnAspLysLeuIle-219  
 227-LeuGluSerGlyIleAsnIleGluThrThrGlySerGlyIleLysLeuAsnSer-244  
 256-SerPheAspSerProLysThrLysAsnSerLysAsnValLysSerGluAspSer-273  
 275-ThrLeuIyrAspSerArgSerGlyIleAlaAsnLeuProAspAspArgSerLeu-292  
 300-GlnSerValArgGlyLeu-305  
 311-ValGluTyrLysGlyLeuAsnVal-318  
 325-ProIlyrPheAspArgSerAspSer-332  
 345-IleArgIleGluProSerArgLeuGluIleAsnAlaAspGluGlnSerLysGluHisTrpLysGlnGlnPhe-  
 -368  
 371-AlaLeuAsnLysGlyLeu-376  
 386-LeuThrGlyGlyLysMetIleGluLeuAsnAspGlnProSerAlaSerProLysLeuArgPro-406  
 416-IleAlaThrArgGlyGlyGlyLeuAspAspLeuGlnValLysLeu-430  
 432-AspLeuLeuAspLysPheAsnAsnLeuProLeuAspLysThrValAla-447  
 450-AsnGlySerLeuIleGluLeuLysSerAlaLeuLysSerAlaAsn-464  
 469-SerIleAspLysLeuValGlyAsnProGlnThrGlnAsnIleProAsnGluLeuAsnGlnThrLeuLysGlu-  
 LeuArgIle-495  
 500-ValSerProGlnSer-504  
 516-SerLeuAspLysThrLeuLysAspValGln-525  
 530-ThrLeuLysGluLysProAsnAla-537  
 541-AsnAsnSerSerLysAspProIleProLysGlySerArg-553

#### **Hydrophilic Regions - Hopp-Woods**

1-MetThrAspAsnSerProProPro-8  
 12-AlaGlnAlaArgValArgLysAsnAsn-20  
 43-LysGluIleArgAsnArgGly-49  
 57-AspSerAlaGluGlyIleGlu-63  
 75-AspValGlyArgValThrArgIleLysLeuArgAspAspGlnLysGlyValGlu-92  
 105-IleArgSerAspThr-109  
 116-ProArgIleAspGln-120  
 140-GlyLysSerGlyGluAlaLysAspValPheGln-150  
 171-GlyLysAsnAspArgIleLeu-177  
 196-AlaHisPheAspProSerAspGln-203  
 214-ProAsnAspLysLeuIle-219  
 258-AspSerProLysThrLysAsnSerLysAsnValLysSerGluAspSer-273  
 278-AspSerArgSerGlyIle-283  
 285-AsnLeuProAspAspArgSer-291  
 311-ValGluTyrLysGly-315  
 328-AspArgAsnAspSer-332  
 345-IleArgIleGluProSerArgLeuGluIleAsnAlaAspGluGlnSerLysGluHisTrpLys-365  
 390-LysMetIleGluLeuAsnAspGlnProSerAlaSerProLysLeuArgPro-406  
 419-ArgGlyGlyGlyLeuAspAspLeuGlnValLysLeu-430  
 432-AspLeuLeuAspLysPheAsn-438  
 441-ProLeuAspLysThrValAla-447  
 454-AlaGluLeuLysSerAlaLeuLysSerAlaAsn-464  
 469-SerIleAspLysLeuValGly-475  
 482-IleProAsnGluLeu-486  
 488-GlnThrLeuLysGluLeuArgIle-495

-732-

516-SerLeuAspLysThrLeuLysAspValGln-525  
530-ThrLeuLysGluLysProAsn-536  
543-SerSerLysAspProIleProLysGlySerArg-553  
**g155**  
**AMPHI Regions** - AMPHI  
28-LysLeuGlyPheGlu-32  
42-AlaAlaSerLeuAsp-46  
105-LeuArgAlaLysLysVal-110  
118-ValProArgIleSerArgAlaGlnAlaLeuAspAlaLeuSerSerMetAlaAsnIleSerGlyTyrArgAla  
ValIleGluAlaAlaAsnAlaPheGlyArgPhePheThrGly-155  
175-ValAlaAlaGlyLeuAlaAlaIleGlyThrAlaAsnSerLeuGlyAlaValValArgAlaPhe-194  
201-AlaGluGlnIleGluSerMetGlyGly-209  
225-AspGlyTyrAlaLysValMet-231  
262-LysProAlaProLysLeuIleThrLysGluMetValGluSerMetLys-277  
294-LeuThrArgProGlyGlu-299  
307-ValLysIleIleGlyTyrThrAspMetAlaAsnArgLeuAlaGlyGln-322  
329-ThrAsnLeuValAsnLeuThrLysLeuLeuSer-339  
403-LysLeuAlaProAlaAlaIle-409  
427-AsnHisPheIleVal-431  
450-LeuHisThrProLeuMetSerValThrAsnAlaIleSerGlyIleMet-465  
468-GlyAlaLeuLeuGln-472  
477-AsnGlyPheValSerLeuLeuSerPheValAla-487  
493-IleAsnIlePheGlyGly-498

**Antigenic Index** - Jameson-Wolf

4-GlyIleProArgGluSerLeuSerGlyGluThrArgVal-16  
44-SerLeuAspAspAlaAla-49  
72-ValAsnAlaProSerGluGlyGluLeuProLeuLeuLysGluGlyGln-87  
94-TrpProArgGlnAsnGluAlaLeu-101  
105-LeuArgAlaLysLysValAsn-111  
117-MetValProArgIleSerArg-123

159-AlaAlaGlyLysValProProAla-166  
194-PheAspThrArgLeuGluValAlaGluGlnIleGluSerMetGlyGlyLys-210

216-PheLeuGlnGluSerGlyGlySerGlyAspGlyTyrAla-228

242-LeuPheAlaGluGlnAlaLysGluValAsp-251  
259-IleProGlyLysProAlaProLysLeuIleThr-269

271-GluMetValGluSerMetLysSerGlySer-280  
289-GlyGlyAsnCysGluLeuThrArgProGlyGluLeuSerVal-302

319-LeuAlaGlyGlnSerSer-324  
337-LeuLeuSerProAsnLysAspGlyGluIle-346

348-LeuAspPheGluAspValIle-354  
359-ThrValThrArgAspGlyGluIleThrPhePro-369

376-SerAlaArgProGlnGlnThrProSerGluLysAlaAlaProAlaAlaLysProGluProLysPro-397

**Hydrophilic Regions** - Hopp-Woods

4-GlyIleProArgGluSerLeuSerGlyGluThrArgVal-16  
44-SerLeuAspAspAlaAla-49  
74-AlaProSerGluGlyGluLeuProLeuLeuLysGluGlyGln-87

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96-ArgGlnAsnGluAlaLeu-101  
 105-LeuArgAlaLysLysValAsn-111  
 117-MetValProArgIleSerArg-123  
 194-PheAspThrArgLeuGluValAlaGluGlnIleGluSerMetGly-208  
 220-SerGlyGlySerGlyAspGlyTyrAla-228  
 242-LeuPheAlaGluGlnAlaLysGluValAsp-251  
 260-ProGlyLysProAlaPro-265

271-GluMetValGluSerMetLysSer-278  
 290-GlyAsnCysGluLeuThrArgProGlyGlu-299  
 339-SerProAsnLysAspGlyGluIle-346

348-LeuAspPheGluAspValIle-354  
 359-ThrValThrArgAspGlyGluIle-366  
 377-AlaArgProGlnGlnThrProSerGluLysAlaAlaProAlaAlaLysProGluProLysPro-397  
**g156**  
**AMPHI Regions - AMPHI**  
 56-AsnGlyPheGluAlaPheAlaProPhe-64  
 80-AlaThrValAsnThr-84

**Antigenic Index - Jameson-Wolf**

21-TyrAlaLysLysAlaGlyGlyPheArgPheLysAspAsnHisAsnProArgGly-38  
 44-GlnGlyAlaAlaAla-48  
 51-HisAlaAlaAlaGlnGlnAsnGlyPheGlu-59  
 73-AlaThrGlyAsnAlaGlyGln-79  
 103-AspLysAlaAlaLeu-107

**Hydrophilic Regions - Hopp-Woods**

21-TyrAlaLysLysAlaGlyGlyPheArgPheLysAspAsnHisAsnPro-36  
 103-AspLysAlaAlaLeu-107  
**g157**  
**AMPHI Regions - AMPHI**  
 21-GlyArgAspValArgAlaAla-27  
 29-AlaIleLysIleAsnArgLeuLeuLysArgTyrIleLysArgGly-43  
 57-ArgLeuGlyGlyPheValArgAlaAlaGln-66  
 137-LeuGlyGlnAlaGlyGly-142  
 167-GlnLeuValAspArgLeuProArgGluAla-176

**Antigenic Index - Jameson-Wolf**

1-MetArgAsnGluGluLysArgAlaLeuArgArgGluLeuArgGlyArgArgSerGlnMetGlyArgAspValAla-26  
 34-ArgLeuLeuLysArgTyrIleLysArgGlyArgLysIle-46  
 51-ProMetGlyLysGluLeuArg-57  
 64-AlaAlaGlnLysArgGlyAlaLysLeu-72  
 77-IleGluProHisThrArgArgMetTrp-85  
 87-ThrProTyrProGluArgGlyMetGluArgGluArgLysArgGlyArgAlaLysLeu-105  
 110-PheAlaGlyArgLysIleArgVal-117  
 129-GlyIleAspArgGluGlyTyrArgLeuGlyGln-139  
 151-MetLysTyrArgLeuGlnAla-157  
 168-LeuValAspArgLeuProArgGluAlaHisAspLeuProLeu-181

**Hydrophilic Regions - Hopp-Woods**

1-MetArgAsnGluGluLysArgAlaLeuArgArgGluLeuArgGlyArgArgSerGlnMetGlyArgAspValAla-26  
 34-ArgLeuLeuLysArgTyrIleLysArgGlyArgLysIle-46

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64-AlaAlaGlnLysArgGlyAla-70  
 89-TyrProGluArgGlyMetGluArgGluArgLysArgGlyArgAlaLysLeu-105  
 111-AlaGlyArgLysIleArgVal-117  
 129-GlyIleAspArgGluGlyTyrArg-136  
 151-MetLysTyrArgLeuGlnAla-157  
 168-LeuValAspArgLeuProArgGluAlaHisAspLeuPro-180  
 g158

**AMPHI Regions - AMPHI**

20-PheSerArgAlaAlaGlnLeuGlu-28  
 33-AlaValSerArgIleValLysArgLeuGlu-42  
 46-GlyValAsnLeuLeuAsnArgThrThrArgGlnLeuAsn-58  
 63-GlyAlaGlnTyrPheArgArgAlaGlnArgIleLeuGlnGlu-76  
 85-LeuAlaValHisGluValProGln-92  
 160-PheAspSerHisPheArgValValAlaSerPro-170  
 178-ThrProGlnSerAlaGluAspLeu-185  
 188-HisGlnCysLeuGlyPheThrGluProGlySerLeuAsnThrTrpAlaVal-204  
 287-AspPheLeuValLysGluLeuGlyLysAsnMetAsnArgThrAsnThr-302

**Antigenic Index - Jameson-Wolf**

1-MetLysThrAsnSerGluGluLeu-8  
 16-GluSerGlySerPheSerArgAlaAlaGluGlnLeuGluMetAlaAsn-31  
 36-ArgIleValLysArgLeuGluGluLysLeuGly-46  
 49-LeuLeuAsnArgThrThrArgGlnLeuAsnLeuThrGluGluGlyAlaGlnTyrPheArgArgAlaGlnArgIleLeuGln-75  
 78-AlaAlaAlaGluThrGluMet-84  
 95-LeuArgValAspSer-99  
 114-LysPheAsnGluArgTyrProHisIleArg-123  
 136-IleGluArgLysValAspIle-142  
 144-LeuArgAlaGlyGluLeuAspAspSerGlyLeuArgAla-156  
 168-AlaSerProGluTyrLeuAla-174  
 176-HisGlyThrProGlnSerAlaGluAspLeuAla-186  
 192-GlyPheThrGluProGlySerLeuAsn-200  
 207-AlaGlnGlyAsnProTyrLysIle-214  
 216-ProHisPheThrAlaSerSerGlyGluIleLeu-226  
 229-LeuCysLeuSerSerCysGly-235  
 243-LeuValAspAsnAspIleThrGluGlyLysLeu-253  
 258-AlaGluGlnThrSerAsnLysThrHisProPhe-268  
 273-TyrSerAspLysAlaValAsnLeu-280  
 292-GluLeuGlyLysAsnMetAsnArgThrAsnThrLys-303

**Hydrophilic Regions - Hopp-Woods**

1-MetLysThrAsnSerGluGluLeu-8  
 19-SerPheSerArgAlaAlaGlnLeuGluMet-29  
 36-ArgIleValLysArgLeuGluGluLysLeuGly-46  
 58-AsnLeuThrGluGluGlyAlaGlnTyrPheArgArgAlaGlnArgIleLeuGln-75  
 78-AlaAlaAlaGluThrGluMet-84

95-LeuArgValAspSer-99

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114-LysPheAsnGluArgTyrPro-120  
136-IleGluArgLysValAspIle-142

144-LeuArgAlaGlyGluLeuAspAspSerGlyLeuArgAla-156

180-GlnSerAlaGluAspLeuAla-186  
246-AsnAspIleThrGluGlyLysLeu-253  
260-GlnThrSerAsnLysThrHis-266  
276-LysAlaValAsnLeu-280  
292-GluLeuGlyLysAsnMetAsnArgThrAsnThrLys-303  
g160

**AMPHI Regions - AMPHI**

6-LysLeuValAspLeuAlaGlnLeuThrGly-15  
27-TrpHisGluThrLeu-31  
69-GlyLeuGlyHisVal-73  
97-LysGlnCysGlyAsn-101  
118-AlaAspIleMetAsnGlyLeuProGluThr-127  
154-GlyThrValSerValValAsnAlaLeuProSer-164  
183-LeuSerGlyValLeuLysGlyTrpGlnAspLysArg-194  
197-HisLeuIleGlnLysValIleAspLysProGlu-207  
216-ValAlaAlaAlaAsn-220  
226-LeuMetArgArgPheLysSer-232  
239-HisAlaPheValAsnHisIleArg-246  
276-PheGlyLysAlaPheLys-281

**Antigenic Index - Jameson-Wolf**

2-AspIleLeuAspLysLeuValasp-9  
13-LeuThrGlySerAlaAspVal-19  
30-ThrLeuGlnArgGluGlyLeu-36  
49-IleAspGlyGluThrSerProArgProValGlyThrGlyAsp-62  
74-LeuSerHisAspGlyLysTyrGlyGluSerLeuGlnProAspIleArgGlnAsnGlyThrPhe-94  
98-GlnCysGlyAsnGlyLeu-103  
112-PheArgTyrAspThrHisAla-118  
120-LeuMetAsnGlyLeu-124  
146-LeuGluSerGluLysProLeu-152  
175-LeuGluGlnAspLysAspValGluLeu-183  
189-GlyTrpGlnAspLysArgLeuGly-196  
202-ValIleAspLysProGluAspGluTrpAsnIleAspLysMetVal-216  
225-GlnLeuMetArgArgPheLysSerGlnVal-234  
252-LeuLeuLeuLysLysThrProAspSerValLeu-262  
271-GlnSerGluThrHisPhe-276  
278-LysAlaPheLysArg-282  
287-SerProGlyGlnTyrArgLysGluGlyGlyGlnLys-298

**Hydrophilic Regions - Hopp-Woods**

2-AspIleLeuAspLysLeuValAsp-9  
30-ThrLeuGlnArgGluGlyLeu-36  
50-AspGlyGluThrSerProArgProValGly-59  
76-HisAspGlyLysTyrGlyGlu-82  
84-LeuGlnProAspIleArgGln-90  
146-LeuGluSerGluLysProLeu-152  
175-LeuGluGlnAspLysAspValGluLeu-183

190-TrpGlnAspLysArgLeuGly-196

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202-ValIleAspLysProGluAspGluTrpAsnIle-212  
 225-GlnLeuMetArgArgPheLysSer-232  
 255-LysLysThrProAspSerValLeu-262  
 278-LysAlaPheLysArg-282  
 290-GlnTyrArgLysGluGlyGlyGlnLys-298  
**g163**  
**AMPHI Regions - AMPHI**  
 60-SerGlyLeuGlyAsnIle-65  
 67-LeuGlyArgAspGluAsp-72  
 76-PheGlyPheLeuSerTrpLeuAlaMetLeuPhe-86  
 100-AlaGluProLeuMetHisTyrPheSerAspIle-110  
 170-IleSerGlyArgPheGlyAspAlaIleAspLeMetAlaLeuAlaThrPhePheGlyIleIleThrThr-193  
 227-MetSerLeuAlaValValSerAlaIleSerGlyValGlyLysGlyValLysValLeuSer-246  
 272-AlaPheGlyAspAsnIleGlyAsnTyrLeuGlyAsnLeuValArg-286  
 313-TrpCysSerTrpAlaProPheValGlyLeuPheIleAla-325  
 346-LeuPheGlyValLeuTrpPhe-352  
 367-AlaGlyMetLeuGluLysMetThrSerSer-377  
 380-ThrLeuLeuPheLysPheAsnTyrLeuProLeuProGluLeuThrSerIleValSerLeuLeu-401  
 438-TrpGlyValLeuMetSerAla-444  
 454-GlyLeuGlyAsnLeuGlnSerMetThrLeu-463  
 510-ArgLeuValArgIleMetSer-516  
 520-GluGlnAspIleLeuLysPheLeuLysHisThrAla-531  
 535-MetHisGluLeuGlnArgGluLeu-542  
 574-AspPheMetTyrGlyIle-579  
 583-GlyGlnAspValSerAspGlnLeu-590  
 630-AlaAspIleLeuLysAsnTyr-636

**Antigenic Index - Jameson-Wolf**

29-AspArgAlaLysGlu-33  
 65-IleArgLeuGlyArgAspGluAspValPro-74  
 114-AlaProGluHisArgGlnGln-120  
 166-LeuLysGluLysIleSerGlyArgPheGlyAspAlaIleAsp-179  
 200-GlnLeuGlyAlaGlyLeu-205  
 237-GlyValGlyLysGlyValLysVal-244  
 293-AlaTyrGluArgGluHisLysProTrpPhe-302  
 326-ArgIleSerLysGlyArgThrIleArg-334  
 370-MetLeuGluLysMetThrSerSerProGlu-379  
 409-ThrSerAlaAspSerGlyIle-415  
 421-IleThrSerArgAspLysGlyLeuSerAlaProArgTrp-433  
 451-ArgSerGlyLeuGlyAsn-457  
 484-LeuSerAlaAspLysLysTyrPheGluThrArgValAsnProThrSer-499  
 503-ThrGlyGlyLysTrpLysGluArgLeuVal-512  
 516-SerGlnThrGlnGluGlnAspIle-523  
 537-GluLeuGlnArgGluLeuSerGluGluTyrGlyLeu-548  
 550-ValArgValAspLysMetPheHisGlnAspGluProAla-562  
 566-ValIleArgLysGluThrMetArg-573  
 581-SerValGlyGlnAspValSerAspGlnLeuIleAsnAspGlyLysLeuProHisIleArgHisGlnThrThrTyrLysProTyr-608  
 612-PheAspGlyArgValGlyTyr-618  
 622-TyrMetAsnLysAspGluLeuIle-629  
 632-IleLeuLysAsnTyrGlu-637  
 654-GluGlnValGluLeuAlaGlu-660

**Hydrophilic Regions - Hopp-Woods**

29-AspArgAlaLysGlu-33  
 66-ArgLeuGlyArgAspGluAspValPro-74  
 114-AlaProGluHisArgGlnGln-120  
 166-LeuLysGluLysIleSerGlyArgPheGlyAsp-176  
 238-ValGlyLysGlyValLysVal-244  
 293-AlaTyrGluArgGluIleLysPro-300  
 327-IleSerLysGlyArgThrIleArg-334  
 370-MetLeuGluLysMetThrSerSerPro-378  
 422-ThrSerArgAspLysGlyLeuSer-429  
 484-LeuSerAlaAspLysLysTyrPheGlu-492  
 506-LysTrpLysGluArgLeuVal-512  
 516-SerGlnThrGlnGluGlnAspIle-523  
 537-GluLeuGlnArgGluLeuSerGluGluTyrGlyLeu-548  
 550-ValArgValAspLysMetPheHisGlnAspGluProAla-562  
 566-ValIleArgLysGluThrMetArg-573  
 581-SerValGlyGlnAspValSerAsp-588  
 590-LeuIleAsnAspGlyLysLeuProHis-598  
 622-TyrMetAsnLysAspGluLeuIle-629  
 654-GluGlnValGluLeuAlaGlu-660  
**g164**

**AMPHI Regions - AMPHI**

12-TyrIleLeuAsnAspCys-17  
 28-LeuSerLysGluLeuAlaGlyLeuLysAla-37  
 62-PhePheGluAsnValArgArgPheProGlu-71  
 75-LeuGlyArgGlnProArgIleAsnAspLeuAlaHis-86  
 104-TyrAlaAsnLeuPheAlaAsnLeuAsnGlyIleGluArgIlePheLys-119  
 179-ValProAlaIleTyrThr-184  
 197-TrpPheAsnArgIle-201  
 226-AlaLysLeuLeuGluGlyTyrGlyLeuSer-235  
 277-GluValGlyGluLeuIle-282  
 289-MetArgGlyTyrLeuAsn-294  
 302-ThrIleValAsnGlyTrpLeuLys-309  
 339-ValTyrProArgGluIleGluGluGlu-347  
 349-HisLysLeuAspAlaValGluAlaAlaAla-358  
 374-PheValGlnLeuLysGluGlyMet-381  
 387-GluIleArgArgHisLeuArgThrVal-395  
 399-PheLysIleProLysGln-404  
 414-AsnAlaThrGlyLysValLeuLysArgValLeuLysGluGlnPheGluGlyAsn-431

**Antigenic Index - Jameson-Wolf**

5-LeuLysAsnSerGlu-9  
 15-AsnAspCysLysAla-19  
 27-GlyLeuSerLysGluLeuAlaGly-34  
 37-AlaGlnThrProValGlu-42  
 45-IleTrpThrAspLysSerArgProAlaGlyGluThrAlaGluGly-59  
 65-AsnValArgArgPheProGluLysProAspLeuGlyArgGlnProArgIleAsnAsp-83  
 90-ThrSerGlyThrThrGlyHisProLysGlyAla-100  
 112-AsnGlyIleGluArgIlePheLysIleSerLysArgAspArgPhe-126  
 205-IleSerGlyGlyAlaProLeuAla-212  
 219-PheLysAlaLysPheProArg-225  
 230-GluGlyTyrGlyLeuSerGluAlaSer-238  
 245-ThrProGluArgGlnLysAlaArgSerVal-254  
 258-LeuProGlyLeuGluAlaLysAlaValAspGluGluLeuValProArgGlyGluValGly-279  
 282-IleValArgGlyGlySerValMet-289  
 297-AlaAlaThrAspGluThrIle-303

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306-GlyTrpLeuLysThrGlyAsp-312  
 315-ThrIleAspGluAspGly-320  
 325-ValAspArgLysLysAspLeuIleIleSerLysGlyGlnAsnValTyrProArgGluIleGluGluIle  
 HisLys-350  
 361-glyVallysAspArgTyrAlaAspGluGluIle-371  
 377-LeuLysGluGlyMetAspLeuGlyGluAspGluIleArgArgHisLeu-392  
 405-IleHisPheLysAspGlyLeuProArgAsnAlaThrGlyLysValLeuLysArgValLeuLysGluGlnPhe  
 GluGlyAsnLys-432

**Hydrophilic Regions - Hopp-Woods**

27-GlyLeuSerLysGluLeuAlaGly-34  
 48-AspLysSerArgProAlaGlyGluThrAlaGluGly-59  
 65-AsnValArgArgPheProGluLysProAspLeuGlyArgGlnProArgIleAsnAsp-83  
 113-glyIleGluArgIlePheLysIleSerLysArgAspArgPhe-126  
 219-PheLysAlaLysPheProArg-225  
 245-ThrProGluArgGlnLysAlaArgSer-253  
 261-LeuGluAlaIleAlaValAspGluLeuValGluValProArgGlyGluValGly-279  
 297-AlaAlaThrAspGluIle-303  
 315-ThrIleAspGluAspGly-320  
 325-ValAspArgLysLysAspLeuIleIle-333  
 340-TyrProArgGluIleGluGluGluIleHisLys-350  
 361-glyVallysAspArgTyrAlaAspGluGluIle-371  
 377-LeuLysGluGlyMetAspLeuGlyGluAspGluIleArgArgHisLeu-392  
 409-AspGlyLeuProArgAsnAlaThr-416  
 418-LysValLeuLysArgValLeuLysGluGlnPheGluGlyAsnLys-432  
**g165-1**  
**AMPHI Regions - AMPHI**  
 17-AlaThrLeuGlyValLeuLeuLysGluLeu-26  
 33-ThrLeuIleGluArgLeuGluAsp-40  
 73-IleAsnProAlaArgAlaLeuAsnIleAla-82  
 90-GlnPheTrpAlaThr-94  
 108-AsnAlaValProHis-112  
 121-HisCysArgTyrLeuGlnLysArg-128  
 130-AspValPheLysThrGlnLysLeuPheGluAsnMet-141  
 182-ArgLeuThrArgGlnMetValLysTyrLeuGlnGly-193  
 198-ThrGluPheAsnArgHisValGluAspIleLysArgGlu-210  
 364-LysThrLysGluGlu-368  
 371-AlaSerLeuLeuGluTyrTyrProArgGln-380

**Antigenic Index - Jameson-Wolz**

1-MetAlaGluAlaThrAsp-6  
 24-LysGluLeuGluProSerTrp-30  
 36-GluArgLeuGluAspValAlaLeuGluSerSerAsnAlaTrpAsnAsnAlaGlyThrGly-55  
 97-AlaGluGlyLysLeuGluAspAsnSer-105  
 117-MetAsnGluAspHisCysArgTyrLeuGlnLysArgTyrAspValPheLysThrGlnLysLeuPheGlu-13  
 9  
 141-MetGluPheSerThrAspArgAsnLysIleSerAsp-152  
 157-IleMetArgGlyArgAspGluAsnGlnPro-166  
 169-AlaAsnTyrSerAlaGluGlyThrAspValAspPheGlyArgLeuThrArgGlnMet-187  
 191-LeuGlnGlyLysGlyValLysThrGluPheAsnArgHisValGluAspIleLysArgGluSerAspGly-21  
 3  
 219-ThrAlaAspThrArgAsnProAspTrp-227  
 249-GlnLysSerGlyIleProGluGlyLysGlyTyrGlyGly-261  
 269-PheArgAsnSerAsnProGluThrAlaGluGlnHisAsn-281  
 300-LeuAspThrArgAsnValAspGlyLysArgHisLeu-311

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322-AsnPheLeuLysGlnGlySerPheMet-330  
 361-GluLeuArgLysThrLysGluGluArgPhe-370  
 375-GluTyrTyrProArgGlnThrArgArg-383  
 395-IleXxxTyrAspSerLysLeuArgVal-403  
 410-ValProArgAspAlaArgSerArgIleLeuGluArgArgGlyAlaSerArg-426  
 430-IleSerAlaAspAspThrAlaProSer-438

**Hydrophilic Regions - Hopp-Woods**

1-MetAlaGluAlaThrAsp-6  
 24-LysGluLeuGluPro-28  
 36-GluArgLeuGluAspValAlaLeuGluSer-45  
 97-AlaGluGlyLysLeuGluAspAsnSer-105  
 117-MetAsnGluAspHisCysArgTyrLeuGlnLysArgTyrAspVal-131  
 141-MetGluPheSerThrAspArgAsnLysIleSerAsp-152  
 158-MetArgGlyArgAspGluAsnGlnPro-166  
 172-SerAlaGluGlyThrAspValAspPhe-180  
 182-ArgLeuThrArgGlnMet-187  
 194-LysGlyValLysThrPheAsnArgHisValGluAspIleLysArgGluSerAspGly-213  
 219-ThrAlaAspThrArgAsnProAsp-226  
 252-GlyIleProGluGlyLysGly-258  
 272-SerAsnProGluThrAlaGluGlnHisAsn-281  
 300-LeuAspThrArgAsnValAspGlyLysArg-309  
 361-GluLeuArgLysThrLysGluGluArgPhe-370  
 378-ProArgGlnThrArgArg-383  
 397-TyrAspSerLysLeuArg-402  
 410-ValProArgAspAlaArgSerArgIleLeuGluArgArgGlyAlaSerArg-426  
 431-SerAlaAspAspThrAlaPro-437

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**AMPHI Regions - AMPHI**

16-HisIleAlaSerValLeuHisGlyGly-24  
 45-GlnPheAlaAlaValPheGlyAspIleAlaHisGlnPheGly-58  
 89-ValValGlyMetLeuSerGlyGln-96  
 104-GlnAlaPheAsnArgIleThrAspLeuPhePhe-114  
 132-ArgArgIleValAspValPheAsp-139  
 144-PheArgArgAlaLeuCysArgIleLeuArgLeuPheArgArgIlePheGly-160  
 229-ArgAlaPheCysAla-233

**Antigenic Index - Jameson-Wolf**

4-AlaGluIleLysArgProLeu-10  
 34-LeuGlnGlyGlyMetArgAsnGlnVal-42  
 55-HisGlnPheGlyLys-59  
 68-ArgProAlaArgArgArgValLeu-75  
 82-PheAlaAspAspGlyPheGln-88  
 93-LeuSerGlyGlnProAspGlyValLeu-101  
 125-SerGlnSerGlnThrGlyAsnArgArgIleValAsp-136  
 138-PheAspPheGluAsnArgPheArgArgAlaLeu-148  
 162-AlaAlaGlyGlyLysGlnGlnAla-169  
 172-GlnHisGlyLysArgTyrPhe-178  
 187-SerLysCysArgLeuLysCysArgLeuLysArgGlyArgArgArgPheGlyArgHisTrp-206  
 209-PheAsnGlyArgMetProThrAlaSerArgThrLeuSerAsnAsnSerArgAlaSerLeu-228

**Hydrophilic Regions - Hopp-Woods**

4-AlaGluIleLysArgProLeu-10  
 68-ArgProAlaArgArgArgValLeu-75  
 83-AlaAspAspGlyPhe-87

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128-GlnThrGlyAsnArgArgIleValAsp-136  
 138-PheAspPheGluAsnArgPheArgArgAlaLeu-148  
 165-GlyLysGlnGlnAla-169  
 172-GlnHisGlyLysArgTyrPhe-178  
 187-SerLysCysArgLeuLysCysArgLeuLysArgGlyArgArgPheGly-203  
 213-MetProThrAlaSerArgThrLeuSerAsnAsnSerArgAlaSerLeu-228  
 g205-1

**AMPHI Regions - AMPHI**  
 6-PheAlaValLeuGlyGly-11  
 21-SerGluAsnThrAlaGluGlnProGlnAsnAlaAlaGlnSer-34  
 87-GlyLysHisProAsnAspLeuGluAlaValValGlyLys-99  
 119-HisThrLeuPheAlaLysValGlyAsnIleAlaGluAspGlyGlyLys-135  
 147-GlnProTyrGlnAla-151

**Antigenic Index - Jameson-Wolf**  
 18-CysGlyLysSerGluAsnThrAlaGluGlnProGlnAsnAlaAlaGlnSerAlaProLysProValPhe-40  
 56-GlyGlnSerSerGluGlyLysThrAsnAspGlyLysLysGlnIle-70  
 73-ProIleLysGlyLeuProGluGlnAsnAla-82  
 85-LeuThrGlyLysHisProAsnAspLeuGluAlaValVal-97  
 99-LysCysMetGluThrAspGlyLysAspAlaProSerGlyTrpAlaGluAsnGly-116  
 129-IleAlaGluAspGlyGlyLysLeuThr-137  
 149-TyrGlnAlaGlyLysSerGlyTyr-156  
 168-IleAspSerGluGlyAlaPhe-174

**Hydrophilic Regions - Hopp-Woods**  
 19-GlyLysSerGluAsnThrAlaGluGlnProGln-29  
 57-GlnSerSerGluGlyLysThrAsnAspGlyLysLysGlnIle-70  
 65-LeuThrGlyLysHisProAsnAspLeuGluAlaValVal-97  
 99-LysCysMetGluThrAspGlyLysAspAlaPro-109  
 129-IleAlaGluAspGlyGlyLysLeu-136  
 150-GlnAlaGlyLysSerGly-155  
 168-IleAspSerGluGlyAlaPhe-174  
 g206

**AMPHI Regions - AMPHI**  
 32-ProLysGlnThrValArgGlnIleGlnAlaVal-42  
 44-IleSerHisIleGlyArgThrGln-51  
 81-CysSerGlyMetIleGln-86  
 99-ArgThrAlaArgAspMet-104  
 150-SerGlyLysThrIleLysThrGlu-157

**Antigenic Index - Jameson-Wolf**  
 2-PheSerProAspLysThrLeu-8  
 21-GlyThrThrSerGlyLysHisArgGlnProLysProLysGlnThrValArg-37  
 48-GlyArgThrGlnGlySerGlnGluLeu-56  
 66-ThrProTyrLysTrpGlyGlySerSerThr-75  
 96-LysLeuProArgThrAlaArgAspMetAlaAlaAlaSerArgLysIleProAspSerArgLeuLysAlaGly-119  
 126-ThrGlyGlyAlaHisArgTyrSer-133  
 146-HisAlaProGlySerGlyLysThrIleLysThrGluLysLeuSer-160

**Hydrophilic Regions - Hopp-Woods**  
 23-ThrSerGlyLysHisArgGlnProLysProLysGlnThrVal-36  
 48-GlyArgThrGlnGlySerGln-54  
 96-LysLeuProArgThrAlaArgAspMetAlaAlaAlaSerArgLysIleProAspSerArgLeuLysAlaGly-119

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149-GlySerGlyLysThrIleLysThrGluLysLeuSer-160

**g211**

**AMPHI Regions - AMPHI**

18-ValGlyAsnGlyValAspLysPheGlyArgGlyAla-29

57-GlnPheGluArgAla-61

99-LysGlyPheAspGluIleAsnProAla-107

109-AlaLeuAlaGlnValIleGluLeu-116

153-AspGlyLysArgHisGlyLysLeuHis-161

**Antigenic Index - Jameson-Wolf**

8-AsnGlnLeuGlyGlyArgAsnGlyAlaAlaVal-18

20-AsnGlyValAspLysPheGlyArgGlyAlaAspAsnGlnValGluPheLeuGlu-37

44-GlyAlaSerGlyArgAlaAla-50

73-GlyGluAspAspValVal-78

99-LysGlyPheAspGluIleAsnPro-106

140-CysProArgTyrHisProLysLeuHisAspGlyAsnGlnAspGlyLysArgHisGlyLysLeuHisAspGly  
AlaTyr-165

169-GlnArgGlnSerAlaGly-174

**Hydrophilic Regions - Hopp-Woods**

10-LeuGlyGlyArgAsnGlyAla-16

21-GlyValAspLysPheGlyArgGlyAlaAspAsnGlnValGluPheLeuGlu-37

73-GlyGluAspAspValVal-78

100-GlyPheAspGluIleAsn-105

143-TyrHisProLysLeuHisAspGlyAsnGlnAspGlyLysArgHisGlyLysLeuHisAsp-162

**g212**

**AMPHI Regions - AMPHI**

6-TrpAspGlyIleProAspIleArgThr-14

16-AspGlnThrIleArgLysHisAlaHis-24

40-PheGlnThrAlaGln-44

63-CysLeuGlnPheAspSerIleAsnLeuIleGluHisIle-75

89-ThrArgArgLeuHisGluHis-95

142-AlaSerThrAlaHis-146

199-ArgLeuLeuGlyHis-203

238-HisAsnHisLeuTyrArgSerIleThrSerAlaGluAlaGluLysIle-253

262-TyrAlaGluProLeuCysGlyLeu-269

288-SerHisProLeuIleGluLeu-294

296-GluAsnThrThrLeu-300

397-TrpAsnGluAlaGluGluAla-403

**Antigenic Index - Jameson-Wolf**

8-GlyIleProAspIleArgThrLeuAspGlnThrIleArgLysHisAlaHisProLeu-26

33-ProAspAsnGlnIleProAspPheGlnThrAlaGlnAspAlaSerAspSerGluCysArgLeuLysHisArgLeuAspGln-59

85-ProProSerArgThrArgArgLeuHisGlu-94

105-AlaIleProGlnThrGluSerLysSerAspLysProTrp-117

122-GlnThrSerGluArgLysLysProGluHis-131

158-LeuGluAlaArgIleAlaAlaGln-165

168-SerGlyAsnArgGlnGly-173

180-SerProHisAspThrGlyGlnThrGlu-188

193-GlyTyrGlyTyrThrLysArgLeuLeu-201

205-LeuProAspSerAspThrTrpGlyGlyAsn-214

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220-AsnTyrSerArgThrGluGlnGlnArgAsnHisGluLeuGlyLeu-234

246-ThrSerAlaGluAlaGluLysIleAla-254

258-LeuAsnThrProTyrAlaGluProLeu-266

303-IleSerHisAspGlyGluLysTrpIle-311

328-ThrGlyAlaHisSerProCysLeuPro-336

346-ArgGlnIleArgGlyGlnThrGlyLeuThrProSerThrProPheSerGluGlnLeuArg-365

376-ProSerTrpHisGly-380

391-AsnSerSerAsnThrGlyTrpAsnGluAlaGluGluAlaSerAsnArgGlnAla-408

#### **Hydrophilic Regions - Hopp-Woods**

10-ProAspIleArgThrLeuAspGlnThrIleArgLysHisAla-23

44-GlnAspAlaSerAspSerGluCysArgLeuLysHisArgLeuAspGln-59

87-SerArgThrArgArgLeuHisGlu-94

105-AlaIleProGlnThrGluSerLysSerAspLys-115

122-GlnThrSerGluArgLysLysProGluHis-131

158-LeuGluAlaArgLysAlaAlaGln-165

180-SerProHisAspThrGlyGln-186

206-ProAspSerAspThr-210

222-SerArgThrGluGlnGlnArgAsnHisGlu-231

246-ThrSerAlaGluAlaGluLysIleAla-254

304-SerHisAspGlyGluLysTrpIle-311

346-ArgGlnIleArgGly-350

398-AsnGluAlaGluGluAlaSerAsnArgGlnAla-408

**g214-1**

#### **Hydrophilic Regions - Hopp-Woods**

10-ProAspIleArgThrLeuAspGlnThrIleArgLysHisAla-23

44-GlnAspAlaSerAspSerGluCysArgLeuLysHisArgLeuAspGln-59

87-SerArgThrArgArgLeuHisGlu-94

105-AlaIleProGlnThrGluSerLysSerAspLys-115

122-GlnThrSerGluArgLysLysProGluHis-131

158-LeuGluAlaArgLysAlaAlaGln-165

180-SerProHisAspThrGlyGln-186

206-ProAspSerAspThr-210

222-SerArgThrGluGlnGlnArgAsnHisGlu-231

246-ThrSerAlaGluAlaGluLysIleAla-254

304-SerHisAspGlyGluLysTrpIle-311

346-ArgGlnIleArgGly-350

398-AsnGluAlaGluGluAlaSerAsnArgGlnAla-408

#### **Antigenic Index - Jameson-Wolf**

23-LeuGlnSerAspSerArgArgProIleGlnIleGluAlaAspGlnGlySerLeuAspGlnAlaAsnGlnSerT

hrThrPheSerGlyAsn-52

71-ArgGlyGlyLysGlyGlyGluSerValArgAlaGluGlySerProValArgPheSerGlnThrLeuAspGlyG

lyLysGlyThrValArgGlyGlnAlaAsnAsnVal-106

119-GlyAsnAlaLysValGlnArgGlyGlyAspValAlaGlu-131

138-AsnThrLysThrGluVal-143

148-GlySerThrLysSerGlyAlaLysSerAlaSerLysThrGlyArgVal-163

169-ProSerSerThrGlnLysThrGlu-176

#### **Hydrophilic Regions - Hopp-Woods**

-743-

25-SerAspSerArgArgProIleGlnIleGluAlaAspGlnGlySerLeuAspGlnAlaAsn-44

71-ArgGlyGlyLysGlyGlyGluSerValArgAlaGluGlySerPro-85

92-LeuAspGlyGlyLysGlyThrValArgGlyGlnAla-103

121-AlaLysValGlnArgGlyAspValAlaGlu-131

148-GlySerThrLysSerGlyAlaLysSerAlaSerLysThrGlyArg-162

171-SerThrGlnLysThrGlu-176

**g215**

**AMPHI Regions - AMPHI**

21-SerLeuSerAlaTrpLeuGlyArgIle-29

67-SerAlaLysGlyAlaLysGlnPhe-74

**Antigenic Index - Jameson-Wolf**

3-ValArgTrpArgTyrGly-8

28-ArgIleSerGluValGluIleGluGluValArgLeuAsnProAspGluProGlnTyrThrMetAspGlyLeuAspGlyArgPheAspGlnGlyTyrLeuLys-63

65-HisLeuSerAlaLysGlyAlaLysGlnPheProGluAsnSerAspIleHisPheAspSerProHisLeu-87

99-ValGlySerAspGluAlaValTyrHisThrGluAsnLysGlnValLeuPhe-115

123-LysThrAlaAspGlyArgArgGlnAlaGlyLysValGluThrGluLysLeuHisValAspThrGluSerGlnTyrAlaGlnThrAspThrProVal-154

160-AlaSerHisGlyGlnAlaGlyGly-167

170-TyrAsnHisLysThrGly-175

179-PheSerSerLysValLys-184

187-IleTyrAspThrLysAspMet-193

**Hydrophilic Regions - Hopp-Woods**

29-IleSerGluValGluIleGluGluValArgLeuAsnProAspGluProGlnTyr-46

49-AspGlyLeuAspGlyArgArgPheAspGlu-58

65-HisLeuSerAlaLysGlyAlaLysGlnPheProGluAsnSerAspIleHisPhe-82

99-ValGlySerAspGluAlaValTyr-106

108-ThrGluAsnLysGlnValLeu-114

123-LysThrAlaAspGlyArgArgGlnAlaGlyLysValGluThrGluLysLeuHisValAspThrGluSerGlnTyrAla-148

187-IleTyrAspThrLysAspMet-193

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**AMPHI Regions - AMPHI**

19-AlaGluGlyLeuArgGluIleAlaAlaGluLeu-29

50-ArgLysMetAlaAla-64

165-LeuGlyAspAlaLeuAlaVal-171

201-ValAlaAspIleMetHis-206

251-GlyAspLeuArgLeuPheGlnGluCysAspAsnPheThrGlyLeuSerIle-268

272-MetHisThrHisProLysThrIleSerAla-281

290-LysValMetGlnAlaAsn-295

**Antigenic Index - Jameson-Wolf**

1-MetAlaGluAsnGluIysTyrLeuAspTrpAlaArg-12

14-ValLeuHisThrGluAlaGluGlyLeuArgGluIleAlaAlaGluLeuAspGlu-31

43-CysLysGlyArgVal-47

51-GlyMetGlyLysSerGlyHisIleGlyArgLysMetAla-63

80-GluAlaAlaHisGlyAspLeu-86

90-ValAspAsnAspVal-94

99-SerAsnSerGlyGluSerAspGluIle-107

113-AlaLeuLysArgLysAspIle-119

125-ThrAlaArgProAspSerThrMetAlaArgHisAlaAsp-137

144-ValSerGlnGluAlaCysProLeu-151

177-ArgAlaPheThrProAspAspPheAla-185

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190-AlaGlySerLeuGlyLys-195  
 203-AspIleMetHistylsGlyGlyGlyLeuProAla-213  
 227-MetSerGluLysGlyLeu-232  
 238-ThrAspGlyGlnGlyCysLeu-244  
 248-PheThrAspGlyAspLeuArgArgLeuPheGlnGluCysAspAsnPheThr-264  
 275-HisProLysThrIleSerAlaGluArgLeuAlaThrGluAlaLeuLys-290

**Hydrophilic Regions - Hopp-Woods**

1-MetAlaGluAsnGluLysTyrLeuAspTrpAlaArg-12  
 14-ValLeuHisThrGluAlaGluGlyLeuArgGluIleAlaAlaGluLeuAspGlu-31  
 43-CysLysGlyArgVal-47  
 56-GlyHisIleGlyArgLysMetAla-63  
 100-AsnSerGlyGluSerAspGluIle-107  
 113-AlaLeuLysArgLysAspIle-119  
 126-AlaArgProAspSerThrMetAlaArgHisAlaAsp-137  
 144-ValSerGlnGluAla-148  
 177-ArgAlaPheThrProAspAsp-183  
 227-MetSerGluLysGlyLeu-232  
 251-GlyAspIleuArgArgLeuPheGlnGluCysAspAsn-262  
 277-LysThrIleSerAlaGluArgLeuAlaThrGluAlaLeuLys-290  
**g218**

**AMPHI Regions - AMPHI**

9-AlaLysValValAsnThrMet-15  
 23-HisThrMetAspGluIleHisGly-30  
 78-AlaArgSerTrpTrpArgAsnLeuHisGlyAlaPheGlyThrTrpValSerLeuIleLeu-97  
 111-TrpGlyGlyLysPheValGlnAlaTrpAsnGlnPhePro-123  
 176-ThrGluProAsnAsnIle-181  
 187-PheArgAlaGlyAsnArgPheGlnArgAlaLeuSerVal-199

**Antigenic Index - Jameson-Wolf**

14-ThrMetProArgAsnGlnGlyTyr-21  
 26-AspGluIleHisGly-30

62-AlaLysGlnArgGlyIleLys-68  
 71-LeuLeuProProLysSerArgAlaArgSerTrpTrp-82  
 86-HisGlyAlaPheGly-90  
 123-ProAlaGlyLysTrpGlyValGluProAsnProVal-134  
 143-ValLeuAsnAspGlyLysValLysGlu-151  
 167-ThrValGlyGluAsnGlyIleAsnProThrGluProAsnAsnIleGlyAsnArgArgProPheArgAlaGly  
 AsnArgPheGlnArg-195

201-PheAlaGlnArgArgGlyArgGlyMetAspPhe-211

**Hydrophilic Regions - Hopp-Woods**

26-AspGluIleHisGly-30  
 64-GlnArgGlyIleLys-68  
 74-ProLysSerArgAla-78

143-ValLeuAsnAspGlyLysValLysGlu-151  
 171-AsnGlyIleAsnProThrGluProAsnAsnIleGlyAsnArgArgProPheArgAlaGlyAsnArgPheGln  
 Arg-195

201-PheAlaGlnArgArgGlyArgGlyMetAsp-210

**g225-1**

**AMPHI Regions - AMPHI**

-745-

23-LeuAlaAspGluLeuThrAsn-29  
 37-IleLeuArgGlnPhe-41  
 92-AspLysLeuIleGlySerAlaMetArg-100  
 122-PheMetGlnHisIlePheLys-128  
 188-ThrGlyLysAsnIle-192

**Antigenic Index - Jameson-Wolf**

22-AlaLeuAlaAspGluLeuThr-28  
 32-SerSerArgGluGlnIleLeu-38  
 41-PheAlaGluAspGluGlnProVal-48  
 50-ProValAsnArgAlaProAlaArgArgAlaGlyAsnAlaAspGluLeuIle-66  
 79-ArgValAsnArgAlaXxxAlaArgArgAlaGlyAsnAlaAspLysLeuIle-95  
 115-ThrGlyPheAspCysSerGly-121  
 135-LeuProArgThrSerAlaGluGlnAlaArgMet-145  
 147-AlaProValAlaArgSerGluLeuGlnProGlyAsp-158  
 165-LeuGlyGlySerArgIleSer-171  
 184-HisAlaProArgThrGlyLysAsnIleGlu-193  
 196-SerLeuSerHisLysTyrTrpSerGlyLys-205  
 210-ArgArgValLysLysAsnAspProSerArgPhe-220

**Hydrophilic Regions - Hopp-Woods**

22-AlaLeuAlaAspGluLeuThr-28  
 32-SerSerArgGluGlnIleLeu-38  
 41-PheAlaGluAspGluGlnPro-47  
 53-ArgAlaProAlaArgArgAlaGlyAsnAlaAspGluLeuIle-66  
 79-ArgValAsnArgAlaXxxAlaArgArgAlaGlyAsnAlaAspLysLeuIle-95  
 137-ArgThrSerAlaGluGlnAlaArgMet-145  
 149-ValAlaArgSerGluLeuGlnPro-156  
 187-ArgThrGlyLysAsnIleGlu-193  
 210-ArgArgValLysLysAsnAspProSerArg-219

**g226****AMPHI Regions - AMPHI**

44-LeuIleAlaTyrLeuLys-49  
 98-GlnLeuAlaGlySerValThrGlyIleValThr-108  
 142-ThrLeuTyrAlaArgValLeuProPro-150  
 165-ThrLeuArgArgPhe-169  
 174-LysLysLeuArgProPheLysProLeuLeuProVal-185

**Antigenic Index - Jameson-Wolf**

3-GluIleLeuArgGlnProSer-9  
 25-ValArgThrArgThrGlyAsnIle-32  
 67-PheArgLeuLysPro-71  
 81-TyrGlnAsnArgArgLysIle-87  
 117-GlyProAspThrGlnPhe-122  
 124-PheProProArgLeu-128  
 155-ProProLeuLeuProArgLeuGlyProHisThrLeuArgArg-168  
 171-IleLeuProLysLysLeuArgProPheLys-180

**Hydrophilic Regions - Hopp-Woods**

25-ValArgThrArgThr-29  
 82-GlnAsnArgArgLysIle-87  
 173-ProLysLysLeuArgPro-178

**g227****AMPHI Regions - AMPHI**

36-GlyValLeuPheAlaLeuLeuGlnAla-44

-746-

51-TrpLeuGlnGlnLeuThrAspAlaLeu-59  
 74-ValIleSerTyrLeuAspLeuIleAlaAspAspTrpPheSer-87  
 g230-1  
**AMPHI Regions - AMPHI**  
 6-GluLysTyrArgThr-10  
 49-GluHisSerIleAsnAsn-54  
 56-MetGlnAsnGln-60  
 69-AspAlaValPheGlnSerLeuLeuGln-77  
 81-LeuLysGlnGlyAlaLys-86  
 96-GlnIleLysGlnMetIle-101  
 115-SerHisAlaLeuLeuSer-120  
 133-PheValGluGluIleArgAspGlnPhe-141  
 144-GlnAsnLeuValSerLeu-149  
 161-AlaGluGlnLeuIleArgLeuThrGlnValAsnArgThrIleArg-175  
 184-PheIleAlaGlnVal-188  
 194-AspLeuGlnLysPheTyrAsn-200  
 234-GluValLysAsnAlaPheGluGluArgValAlaArgLeu-246  
 272-ValAlaAspPheAsnLys-277  
 284-AspAspAlaPheAsnHisProSerSerLeuAlaGluAla-296  
 319-SerGlyMetProGluAsnLeuIleAsnAlaVal-329  
 398-LeuAsnGlyLys-402  
 426-GluAlaTyrAlaGluLeu-431  
 461-ThrProProGluAspIleAlaAla-468  
 488-LeuLeuIleArgTyrPheAsn-494

**Antigenic Index - Jameson-Wolf**  
 4-SerIleGluLysTyrArgThrProAla-12  
 32-SerHisProGlyAlaAsp-37  
 42-ValGlyAspGluLysIleSerGluHisSerIle-52  
 56-MetGlnAsnGlnGlnAlaAspGlyGlySerProTrpArg-68  
 80-TyrLeuLysGlnGlyAla-85  
 92-ValSerSerGluGlnIleLys-98  
 101-IleValAspAspProAsnPheHisAspAlaAsnGlyLysPhe-114  
 123-LeuSerGlnArgHisMetSerGluAspGlnPheValGluIleArgAsp-139  
 169-GlnValAsnArgThrIleArgSerHisThrPheAsnProAspGluPhe-184  
 189-LysAlaSerGluAlaAspLeu-195  
 199-TyrAsnAlaAsnLysLysAspTyrLeu-207  
 223-AspPheAlaAspLysGlnThrValSerGluThrGluValLysAsnAlaPheGluGluArgValAlaArg-24  
 5  
 247-ProAlaHisGluAlaLysProSerPheGluGlnGluLysAlaAlaValGluAsnGluLeuLysMetLysLys  
 AlaValAlaPheAsnLysAlaGluLysLeuGlyAspAlaPheAsnHisProSerSerLeuAlaGluA  
 laAlaLysAsnSerGlyLeuLysValGluThrGlnGluThrTrpLeuSerArgGlnAspAlaGlnMetSerGlyMe  
 tProGluAsn-324  
 330-PheSerAspAspValLeuLysLysLysHisAsnSerGlu-342  
 355-ArgAlaLysGluValArgGluGluLysAsnLeuLeu-366  
 368-GluGluAlaLysAspAlaValArg-375  
 377-AlaTyrIleArgThrGluAlaAlaLysLeuAlaGluAsnLysAlaLysGluValLeu-395  
 399-AsnGlyGlyLysAlaValAsp-405  
 417-GlnGlnAlaArgGlnSerMetProProGluAlaTyr-428  
 432-LeuLysAlaLysProAlaAsnGlyLysProAla-442  
 459-AlaValThrProProGluAspIleAla-467  
 476-AlaLeuAlaGlnGlnSerAlaAsnThrPhe-486  
 493-PheAsnGlyLysIleLysGlnSerGlnThrLysGlyAlaGlnSerValAspAsnGlyAspGln-512

**Hydrophilic Regions - Hopp-Woods**

6-GluLysTyrArgThr-10  
 42-ValGlyAspGluLysIleSerGlu-49  
 56-MetGlnAsnGluGlnAlaAspGly-63  
 92-ValSerSerGluGlnIleLys-98  
 101-IleValAspAspProAsnPhe-107  
 110-AlaAsnGlyLysPhe-114  
 126-ArgHisMetSerGluAspGlnPheValGluGluIleArgAsp-139  
 189-LysAlaSerGluAlaAspLeu-195  
 200-AsnAlaAsnLysLysAspTyrLeu-207  
 223-AspPheAlaAspLysGlnThrValSerGluThrGluValLysAsnAlaPheGluGluArgValAlaArg-24  
 5  
 247-ProAlaHisGluAlaLysProSerPheGluGlnGluLysAlaAlaValGluAsnGluLeuLysMetLysLys  
 AlaValAlaAspPheAsnLysAlaLysGluLysLeuGlyAspAspAlaPheAsn-288  
 292-SerLeuIleGluAlaAlaLysAsnSerGlyLeuLysValGluThrGlnGlu-308  
 310-TrpLeuSerArgGlnAspAlaGlnMet-318  
 333-AspValLeuIleLysLysHisAsnSer-341  
 355-ArgAlaLysGluValArgGluGluLysAsnLeuLeu-366  
 368-GluGluIleLysAspAlaValArg-375  
 377-AlaTyrIleArgThrGluAlaAlaLysLeuAlaGluAsnLysAlaLysGluValLeu-395  
 417-GlnGlnAlaArgGlnSerMetPro-424  
 432-LeuLysAlaLysProAlaAsnGly-439  
 461-ThrProProGluAspIleAla-467  
 496-LysIleLysGlnThrLysGlyAlaGlnSerValAspAsnGlyAspGlyGln-512  
**g231-1**  
**AMPHI Regions - AMPHI**  
 7-IleAsnArgProTyrGlnLysProAlaGluLeu-17  
 98-ArgIlePheSerPheProGln-104  
 169-TyrAsnGluPheArgThrLeuArgArg-177  
 209-AlaValAspAspValLysGlyIleAlaVal-218

**Antigenic Index - Jameson-Wolf**  
 1-MetSerLysArgLysSerIleAsnArgProTyrGlnLysProAlaGlu-16  
 18-ProProLeuGlnAsnAsnProProPheFyrArgLysAsnArgArgLeuAsn-34  
 39-AlaAspGlyCysAlaSerProGlnLysCysArgAlaArgGlyPheGln-55  
 90-ProAlaValArgProArgArgLeuArg-98  
 135-MetProArgArgProVal-140  
 167-HisThrTyrAsnGluPheArgThrLeuArgArgArgAlaGlnVal-181  
 196-ValAspIleArgHisProAsn-202  
 209-AlaValAspAspValLysGly-215

**Hydrophilic Regions - Hopp-Woods**  
 1-MetSerLysArgLysSerIleAsn-8  
 10-ProTyrGlnLysProAlaGlu-16  
 26-PheTyrArgLysAsnArgArg-32  
 45-SerProGlnLysCysArgAlaArgGly-53  
 92-ValArgProArgArgLeuArg-98  
 136-ProArgArgProVal-140  
 173-ArgThrLeuArgArgArgAlaGlnVal-181  
 196-ValAspIleArgHis-200  
 209-AlaValAspAspValLysGly-215  
**g232**  
**AMPHI Regions - AMPHI**  
 14-AlaIleLeuPheGly-18  
 21-LeuGlyThrAlaVal-25  
 68-ValArgGlyThrLysSerLeuLeuArgGluThrVal-79

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105-LeuProThrPheThrGln-110  
 151-ValThrValGlyAlaLeuGlySerThrValCys-161  
 173-ArgPheGluGlyLeuAsn-178  
 194-AlaValMetThrLeuIleGlyPhePheGlyGlyPhePheSerValProLeuTyrThrTrpLeu-214

**Antigenic Index** - Jameson-Wolf  
 54-ValProAlaLysAlaAlaAspThrGlnIle-63  
 69-ArgGlyThrLysSerLeuLeuArgGluThrValArgHisAsnProVal-84  
 112-HisLeuGlyGlyAsnAspAsnVal-119  
 140-LysPheGlyArgGluArgLeu-146  
 170-HisGlyHisArgPheGluGly-176  
 217-AlaSerSerGluThrPheArgAlaArgAla-226  
 274-IleLysArgGluArgArgPheLeu-281  
 285-AlaIleArgLysLysPro-290

**Hydrophilic Regions** - Hopp-Woods  
 55-ProAlaLysAlaAlaAspThrGlnIle-63  
 69-ArgGlyThrLysSerLeuLeuArgGluThrValArg-80  
 140-LysPheGlyArgGluArgLeu-146  
 172-HisArgPheGluGly-176  
 220-GluThrPheArgAlaArgAla-226  
 274-IleLysArgGluArgArgPheLeu-281  
 285-AlaIleArgLysLysPro-290  
 g233

**AMPHI Regions** - AMPHI  
 36-GluHisValLeuGly-40  
 61-PheAlaAspLysValGlnThr-67  
 71-GlnValArgValTrpLysAsn-77  
 88-AsnGlyValAlaLysLeuLeuGluThr-96  
 119-AlaLeuAlaArgLeuIleGluGlnAlaGlyAsnAla-130  
 138-ValProValAlaAspThrLeuLysArgAlaGluSer-149  
 182-GluAsnLeuGlyGlyIleThrAsp-189

**Antigenic Index** - Jameson-Wolf  
 1-MetLysArgLysAsnIle-6  
 17-ArgPheGlyAlaAspLysProLysGlnTyrValGluIleGlySerLysThrValLeu-35  
 43-GluArgHisGluAlaValAsp-49  
 56-SerProGluAspThrPheAlaAspLysValGln-66  
 75-TrpLysAsnGlyGlyGlnThrArgAlaGluThrValArgAsnGlyVal-90  
 100-AlaGluThrAspAsn-104  
 109-AspAlaAlaArgCys-113  
 115-LeuProSerGluAlaLeu-120  
 123-LeuIleGluGlnAlaGlyAsnAlaAlaGluGlyGly-134  
 142-AspThrLeuLysArgAlaGluSerGlyGln-151  
 155-ThrValAspArgSerGlyLeu-161  
 183-AsnLeuGlyGlyIleThrAspGluAlaSerAlaValGluLysLeuGlyVal-199  
 206-GlyAspAlaArgAsnLeuLysLeuThrGlnProGlnAspAlaTyr-220

**Hydrophilic Regions** - Hopp-Woods  
 1-MetLysArgLysAsnIle-6  
 18-PheGlyAlaAspLysProLysGlnTyrVal-27  
 43-GluArgHisGluAlaValAsp-49  
 56-SerProGluAspThrPheAlaAspLysValGln-66  
 79-GlyGlnThrArgAlaGluThrValArg-87  
 100-AlaGluThrAspAsn-104

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127-AlaGlyAsnAlaAlaGlu-132  
 142-AspThrLeuLysArgAlaGluSerGlyGln-151  
 187-IleThrAspGluAlaSerAlaValGluLysLeuGlyVal-199  
 206-GlyAspAlaArgAsnLeuLys-212

**g234**

**AMPHI Regions - AMPHI**  
 26-ArgSerLeuGluValAlaLysValAla-34  
 68-AspArgLeuGlySerGln-73  
 83-GlnGlnThrAsnArgPheAsnValLeuAsnArgThrAsn-95  
 121-GlyAspValThrGluPhe-126  
 205-GluAlaValAspAsnLeuValGlnAlaValAspAsn-216

**Antigenic Index - Jameson-Wolf**

21-AlaThrGluSerSerArgSerLeuGluValAlaLys-32  
 51-ThrPheAspAsnArgSerSerPhe-58  
 62-IlePheSerAspSerGluAspArgLeuGlySerGlnAla-74  
 83-GlnGlnThrAsnArgPheAsnValLeuAsnArgThrAsn-95  
 99-LeuLysGlnGluSerGlyIleSerGlyLysAlaGlnAsnLeuLysGlyAlaAspTyr-117  
 121-GlyAspValThrGluPheGlyArgArgAspValGlyAsp-133  
 140-LeuGlyArgGlyLysSerGlnIle-147  
 169-GlnGlyAlaGlyGlu-173  
 175-AlaLeuSerAsnArgGluIle-181  
 185-GlyGlyThrSerGlyTyrAspAlaThrLeuAsnGlyLysValLeu-199  
 214-ValAspAsnGlyAlaTrpGlnSerAsnArg-223

**Hydrophilic Regions - Hopp-Woods**

21-AlaThrGluSerSerArgSerLeuGluValAlaLys-32  
 52-PheAspAsnArgSerSerPhe-58  
 62-IlePheSerAspSerGluAspArgLeuGlySerGlnAla-74  
 99-LeuLysGlnGluSerGlyIleSerGlyLysAlaGlnAsnLeuLysGly-114  
 122-AspValThrGluPheGlyArgArgAspValGlyAsp-133  
 141-GlyArgGlyLysSer-145  
 176-LeuSerAsnArgGluIle-181

**g235****AMPHI Regions - AMPHI**

8-LeuAlaAlaValLeuAlaLeu-14  
 18-GlnValArgLysAlaProAsp-24  
 88-AsnAlaAlaAspIle-92  
 95-ValArgProGluLysLeuHisGlnIlePhe-104  
 120-SerTyrGlnIleLeuAspSerValThrThr-129  
 165-GlyAlaLeuValGlyAlaValValAsnGlnIleAlaAsnSerLeuThr-180  
 187-SerLysThrAlaAlaTyrAsnLeuLeu-195

**Antigenic Index - Jameson-Wolf**

17-CysGlnValArgLysAlaProAspLeuAspTyrThrSerPheLysGluSerLysProAla-36  
 43-ProLeuAsnGluSerProAspValAsnGlyThr-53  
 79-GluThrPheLysGluAsnGlyLeu-86  
 93-HisAlaValArgProGluLysLeu-100  
 131-SerAlaLysAlaArgLeuValAspSerArgAsnGlyLysGluLeuTrpSerGlySerAlaSerIleArgGlu  
 GlySerAsnAsnSerAsnSer-161  
 178-SerLeuThrAspArgGlyTyrGlnValSerLysThrAla-190  
 197-ProTyrSerArgAsnGlyIleLeuLysGlyProArgPheValGluGluGlnProLys-215

**Hydrophilic Regions - Hopp-Woods**

18-GlnValArgLysAlaProAspLeuAsp-26

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29-SerPheLysGluSerLysPro-35  
 44-LeuAsnGluSerProAspVal-50  
 79-GluThrPheLysGluAsnGlyLeu-86  
 93-HisAlaValArgProGluLysLeu-100  
 131-SerAlaLysAlaArgLeuValAspSerArgAsnGlyLysGluLeuTrp-146  
 150-AlaSerIleArgGluGlySerAsnAsnSer-159  
 179-LeuThrAspArgGlyTyrGln-185  
 207-ProArgPheValGluGluGlnProLys-215  
**g236**  
**AMPHI Regions - AMPHI**  
 10-IleLeuArgThrAlaPhe-15  
 107-PheAlaArgPheAlaAspCysArgProPhe-116  
 146-AspAspValProArgPhePheAlaGlyGlu-155  
 168-ArgAspValValGlnGlyGlyLeu-175  
 213-GlyGluValGluGlyIleAlaArgIleValThrAlaCysGlnThrLeuLeuGlnProProArgGlnTyrGln-  
 -236  
 245-IleArgLeuLeuHisGlyIlePheAsnArgIleLysValAla-258  
 275-PheGlyAsnAlaPheGluAspPhe-282  
 316-ValAlaAspGlyPheArgHisPheAlaAla-325

**Antigenic Index - Jameson-Wolf**  
 43-PheGlyGlyAsnGlyLysPheIleThr-51  
 58-ArgHisGlnGlnGlyLysAla-64  
 77-PhePheArgArgGlyAsnPheGlyPheArgLeuGlnGlyArgThrAspSerPhe-94  
 98-GlnArgLeuAspSerGlyGlyTyr-105  
 111-AlaAspCysArgProPhe-116  
 126-ValAspGlyArgGluLeuValProSerMetGluGluAspAla-139  
 145-AlaAspAspValPro-149  
 152-PheAlaGlyGluAlaGlnAsnArgCysAsnGlnGluAsnGlnAlaAlaArgAspValValGlnGlyGlyLeu-  
 -175  
 195-ValGluValGluArgAlaGlnValPheArgAlaGluArgAsnAsnValPhe-211  
 213-GlyGluValGluGlyIleAla-219  
 230-GlnProProArgGlnTyrGln-236  
 261-GlyLysGlnGluAlaGlnGly-267  
 292-IleGlyGlyCysArgProGlnAlaGlnAspValArgAla-304  
 310-PheLeuArgArgAspAspValAlaAspGly-319  
 341-CysAlaSerHisGly-345

**Hydrophilic Regions - Hopp-Woods**  
 87-LeuGlnGlyArgThrAspSer-93  
 98-GlnArgLeuAspSer-102  
 127-AspGlyArgGluLeuValProSerMetGluGluAspAla-139  
 145-AlaAspAspValPro-149  
 156-AlaGlnAsnArgCysAsnGlnGluAsnGlnAlaAlaArgAspValVal-171  
 195-ValGluValGluArgAlaGlnValPheArgAlaGluArgAsnAsn-209  
 213-GlyGluValGluGlyIleAla-219  
 261-GlyLysGlnGluAlaGlnGly-267  
 295-CysArgProGlnAlaGlnAspValArgAla-304  
 310-PheLeuArgArgAspAspValAlaAspGly-319  
**g238**  
**AMPHI Regions - AMPHI**  
 103-ValHisSerProPheAsp-108  
 115-ThrSerAspPheSerGlyGlyVal-122  
 129-TyrGlnLeuHisArgThrGlySer-136

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140-ProAlaAspGlyTyrAspGlyProGlnGlyGlyTyrProGluProGlnGlyAlaArgAspIleTyrSer  
Tyr-164  
221-AsnArgNetAspAspIleArgGlyIleValGlnGlyAlaValAsnProPheLeuThrGlyPheGlnGlyVal  
-244  
246-IleGlyAlaIleThrAspSerAlaValSerProValThrAspThrAlaAlaGlnGlnThrLeuGlnGlyIle  
AsnAspLeuGlyAsn-274  
298-IleAsnSerAlaArgGlnTrpAlaAspAla-307  
342-AspTrpValLysAsn-346  
351-LysProAlaAlaArgHisMetGlnThrVal-360  
367-GlyAsnArgProProLysSerIleThrSer-376  
383-AlaThrTyrProLysLeuValAsnGlnLeuAsnGlnGlnAsnLeu-397  
426-GluGluAlaAspArgLeuGlyLysIleTrpVal-436  
454-ThrArgGlnTyrArg-458

**Antigenic Index - Jameson-Wolf**

25-HisAlaAsnGlyLeuAspAlaArgLeuArgAspAspMetGlnAlaLysHisTyrGluProGlyGlyLys-47  
53-AsnAlaArgGlySerValLysAsnArgVal-62  
80-ThrHisGluArgThrGlyPheGluGly-88

96-PheSerGlyHisGlyHisGluVal-103

105-SerProPheAspAsnHisAspSerLysSerThrSerAspPheSerGlyGlyValAspGlyGly-125  
131-LeuHisArgThrGlySerGluIleHisProAlaAspGlyTyrAspGlyProGlnGlyGlyTyrProGlu  
ProGlnGlyAlaArgAspIleTyr-162  
166-IleLysGlyThrSerThrLysThrLysIle-175  
182-ProPheSerAspArgTrpLeuLysGluAsnAlaGlyAla-194  
200-SerArgAlaAspGluAlaGly-206  
210-TrpGluAsnAspProAspLysAsnTrpArgAlaAsnArgMetAspAspIleArgGlyIle-229  
268-GlyIleAsnAspLeuGlyAsnLeuSerProGluAla-279.  
292-PhelalValLysAspGlyIleAsnSerAlaArgGlnTrpAlaAspAlaHisProAsnIle-311  
328-ValTrpArgGlyLysLysValGluLeuAsnProThrLysTrpAspTrpValLysAsnThrGlyTyrLysLys  
ProAlaAlaArg-355  
358-GlnThrValAspGlyGluMetAlaGlyGlyAsnArgProProLysSerIleThrSerGluGlyLysAlaAsn  
-381  
391-GlnLeuAsnGluGlnAsnLeu-397  
401-AlaAlaGlnAspProArgLeu-407  
411-IleHisGluGlyLysLysAsnPhePro-419  
423-AlaThrTyrGluGluAlaAspArgLeuGly-432  
438-GluGlyAlaArgGlnThrSerGlyGlyGlyTrpLeuSerArgAspGlyThrArgGlnTyrArgProProThr  
GluLysLysSerGln-466  
480-ThrIleAspSerAsnGluLysArgAsnLysIleLysAsnGly-493

**Hydrophilic Regions - Hopp-Woods**

29-LeuAspAlaArgLeuArgAspAspMetGlnAlaLysHisTyrGluProGlyGly-46  
54-AlaArgGlySerValLysAsnArgVal-62  
80-ThrHisGluArgThrGlyPhe-86  
107-PheAspAsnHisAspSerLysSerThrSerAspPhe-118  
133-ArgThrGlySerGluIleHisPro-140  
142-AspGlyTyrAspGlyProGln-148  
151-GlyTyrProGluProGlnGlyAlaArgAsp-160  
168-GlyThrSerThrLysThrLysIle-175  
186-ArgTrpLeuLysGluAsnAlaGly-193  
200-SerArgAlaAspGluAlaGly-206  
212-AsnAspProAspLysAsnTrpArgAlaAsnArgMetAspAspIleArgGly-228  
296-AspGlyIleAsnSer-300

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329-TrpArgGlyLysLysValGluLeuAsnProThr-339  
 347-ThrGlyTyrLysLysProAlaAlaArg-355  
 360-ValAspGlyGluMetAlaGlyGlyAsnArgProProLysSerIleThrSerGluGlyLysAlaAsn-381  
 392-LeuAsnGluGlnAsnLeu-397  
 401-AlaAlaGlnAspProArgLeu-407  
 412-HisGluGlyLysLysAsnPhe-418  
 424-ThrTyrGluGluAlaAspArgLeuGly-432  
 438-GluGlyAlaArgGlnThrSer-444  
 449-LeuSerArgAspGlyThrArgGlnTyrArgProProThrGluLysLysSerGln-466  
 482-AspSerAsnGluLysArgAsnLysIleLysAsn-492  
**g239**

**AMPHI Regions - AMPHI**

49-PheArgLeuValGlnSerCys-55  
 72-AsnAlaHisArgLysGln-77  
 123-ProGlyPheAsnAlaLeuProThrIlePhe-132  
 154-GluTyrPheLeuThr-158  
 165-SerSerAsnGluTrp-169  
 221-PheCysAlaThrIleCysAlaSerLeuArg-230

**Antigenic Index - Jameson-Wolf**

6-GlyIleAlaArgAsnArgArgMetGlu-14  
 19-CysArgArgProAspArgPheVal-26  
 28-ArgGlnThrArgLeuLeu-33  
 53-GlnSerCysGluValGluPro-59  
 56-HisAsnGlyLysSerGlyAsnAlaHisArgLysGlnGlnLysGluIleArg-82  
 84-ValHisCysArgSerAspVal-90  
 100-ProAlaValArgSerAlaThrArgLysThrAla-110  
 132-PheArgGlyGlySerGlyLysSerAlaSer-141  
 147-LeuGlyArgGlySerCysCysGluTyr-155  
 164-ArgSerSerAsnGluTrpLys-170  
 173-ThrAlaLysArgProProSerPheArgArgHisMetThrCysGlyAsnThrAlaProThrSerSerSer  
 ArgLeuIleLys-200  
 209-ValAlaGlySerCysProArgSerArgValArgThr-220  
 248-TrpArgLeuAsnArgSerSerPro-255

**Hydrophilic Regions - Hopp-Woods**

6-GlyIleAlaArgAsnArgArgMetGlu-14  
 20-ArgArgProAspArgPheVal-26  
 67-AsnGlyLysSerGlyAsnAlaHisArgLysGlnGlnLysGluIleArg-82  
 102-ValArgSerAlaThrArgLysThrAla-110  
 135-GlySerGlyLysSerAlaSer-141  
 165-SerSerAsnGluTrpLys-170  
 173-ThrAlaLysArgProProSerPheArgArgHisMet-184  
 193-SerSerSerSerArgLeuIleLys-200  
 211-GlySerCysProArgSerArgValArgThr-220  
 251-AsnArgSerSerPro-255  
**g240**

**AMPHI Regions - AMPHI**

19-AlaAspValGlyArgPheLeuHis-26  
 64-IleGlnCysLeuArgAsnHis-70  
 88-AlaProLeuPheAla-92  
 108-GlnGlyGluAspPheProArgAlaGlyIleGlnAsnHis-120  
 164-ValGlnAlaValHisAsn-169  
 178-AsnPheArgAlaValPheAlaIle-185  
 189-PheLysArgLysPheGln-194

**Antigenic Index** - Jameson-Wolf  
 10-AlaGluThrArgArgGlnPheAla-17  
 41-AlaHisGlyArgArgSerAspPheIleArg-50

68-ArgAsnHisGluArgPheAspCysArgThrArgPheAsp-80  
 102-ValGlyGlyArgIleGlyGlnGlyGluAspPheProArgAlaGlyIleGlnAsnHisHisArgSerGly-12  
 4  
 140-GlnGlyLeuAsnProLeuIleGluGlyLysAspAspVal-152  
 189-PheLysArgLysPhe-193  
 202-AsnIleGlyLysSerAspAspValCysLys-211

**Hydrophilic Regions** - Hopp-Woods  
 10-AlaGluThrArgArgGlnPheAla-17  
 42-HisGlyArgArgSerAspPheIleArg-50

68-ArgAsnHisGluArgPheAspCysArgThrArgPheAsp-80  
 106-IleGlyGlnGlyGluAspPheProArg-114  
 146-IleGluGlyLysAspAspVal-152  
 189-PheLysArgLysPhe-193  
 204-GlyLysSerAspAspValCysLys-211

**g241-1**

**AMPHI Regions** - AMPHI  
 6-ThrArgAlaAlaAsnProPro-12  
 35-ThrHisThrProHisGluProAlaSerSer-44  
 109-PheLeuIleGlyCysIleAlaHisAlaPheAsnArgSerPheLys-123  
 126-PheHisAlaCysGlnArgMetValAlaVal-135  
 195-HisPheAspArgIleAlaGlyIleLeuThrValIn-206  
 228-GlyPheIleGlnLysLeuIleValGlyIleIleHis-239

**Antigenic Index** - Jameson-Wolf

1-MetProThrArgProThrArgAlaAlaAsnProProThrPro-14  
 22-TyrCysProArgProProTyrArgProProSerValGlnThrHisThrProHisGluProAlaSerSerThrCysAlaAlaLysSerAlaAsnArgArgGluAsnSerHisAsnAlaGlnPro-62  
 68-ProSerAsnLysMetProSerGluThrGluGlnThrLeuPheArgArgHisGlnIleProProSerCysArgGlnSer-93  
 119-AsnArgSerPheLysAla-124  
 147-ThrIleAspAspAsnIleAla-153  
 161-LysHisHisThrAspLeuAspPheAsnArgGluArgAlaArgIlePheAsnThrAspGlnLeu-181  
 188-ArgIleValGlyArgLysArgHisPheAspArg-198  
 209-PheHisGlnArgGluAsnAla-215  
 244-ArgAsnHisGlyIlePheCysAsnSerHis-253  
 255-CysProPheArgAsnSerArgLeuIle-263

**Hydrophilic Regions** - Hopp-Woods

1-MetProThrArgProThrArgAlaAlaAsn-10  
 37-ThrProHisGluProAlaSer-43  
 46-CysAlaAlaLysSerAlaAsnArgArgGluAsnSerHis-58  
 70-AsnLysMetProSerGluThrGluGlnThrLeuPheArg-82  
 120-ArgSerPheLysAla-124  
 161-LysHisHisThrAspLeuAspPheAsnArgGluArgAlaArgIlePheAsn-177  
 188-ArgIleValGlyArgLysArgHisPheAspArg-198  
 209-PheHisGlnArgGluAsnAla-215

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**AMPHI Regions - AMPHI**

25-ValAlaAlaGlnPheValAspPheValGluGln-35  
 46-HisIleLeuGlnAsn-50  
 100-AlaAspGlnThrGln-104  
 122-AsnProPhePheAspPhePheGlnAlaValVal-132  
 137-HisGlnSerGlyPheGlyAspValPhe-145  
 191-PheGlyHisThrArg-195  
 197-PheAspAlaCysLeu-201  
 262-HisProPheAlaAspPheGlyAsnLeuGlnAsnLeuLeuAlaLeu-276

**Antigenic Index - Jameson-Wolf**

14-PheLysGlnArgAlaGlyGlyIleAla-22  
 33-ValGluGlnGluGlnArgValSer-40  
 54-HisArgAlaAspIleGlyThrAlaValProAla-64  
 73-AlaGlnGlyHisThrAspIlePheProProArgCysPheGlyAspGlyPheAlaGlnArgGlyPheAlaHisA  
 laArgArgAlaAspGlnThrGlnAsnArgThrPhe-108  
 137-HisGlnSerGlyPhe-141  
 152-LeuProArgGlnSerGluGlnGlyVal-160  
 164-AlaTyrAspGlyGlyPheGlyArgHisArgArgHisHis-176  
 283-MetArgCysAspArgIleGly-289

**Hydrophilic Regions - Hopp-Woods**

14-PheLysGlnArgAlaGlyGlyIle-21  
 33-ValGluGlnGluGlnArgVal-39  
 54-HisArgAlaAspIle-58  
 95-AlaHisAlaArgAlaAspGlnThrGlnAsnArgThrPhe-108  
 154-ArgGlnSerGluGlnGlyVal-160  
 168-GlyPheGlyArgHisArgArgHisHis-176  
 283-MetArgCysAspArgIleGly-289

g243

**AMPHI Regions - AMPHI**

35-MetThrArgLeuAlaArgLysAlaValGlnArgLeuThrAlaSerHisIleGlnArgPheLeu-55  
 80-AspSerSerArgIleThrSerThrIle-88

**Antigenic Index - Jameson-Wolf**

30-ProSerAsnAlaPro-34  
 37-ArgLeuAlaArgLysAlaValGln-44  
 55-LeuThrGluSerLysThrGlyAlaAsnArgSerSerSerCysLysPro-71  
 77-SerAlaSerAspSerSerArgIle-84  
 102-SerThrThrGlyAlaValThrLysSer-110

**Hydrophilic Regions - Hopp-Woods**

37-ArgLeuAlaArgLysAlaValGln-44  
 55-LeuThrGluSerLysThrGlyAlaAsnArgSerSerSerCysLys-70  
 78-AlaSerAspSerSerArgIle-84

g244-1

**AMPHI Regions - AMPHI**

13-IleAlaAlaLeuLeuArg-18  
 24-AsnAlaLeuGlnGluIleAsnGlnIleIleProGlnThr-36  
 76-ArgLeuHisArgLeu-80  
 98-LeuArgGlyIleLysArgLeuLeuGlnLeuIleGlnSerHisLeuHisThrHis-115  
 150-ArgIleGlyAsnPhe-154  
 206-CysLeuAspGlyPheHisArgLeuHis-214  
 217-AsnArgPhePheThr-221

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249-IleArgThrPheSerArgAsnPheLysGln-258

**Antigenic Index** - Jameson-Wolf  
 1-MetProProGluAlaArgProAlaGlySerAspGly-12  
 20-ValTyrThrGlnAsnAla-25  
 35-GlnThrProSerGly-39  
 43-CysHisArgAsnHisSerArgAlaGlnHis-52  
 81-MetAspIleArgIle-85  
 91-PheArgIleAspPheLeuAsp-97  
 99-ArgGlyIleLysArg-103  
 125-IleGlnLysArgHis-129  
 134-LeuAspArgGlnHisPheHisGlyLysLeuLeuSerGlyGluLeuValArg-150  
 178-PheGlnLeuGlyAsnProArgLeu-185  
 191-ArgLeuGlyGlySer-195  
 234-LeuLysThrAsnTrpLysSerLysSerGlyTyrTyrProSerLysIleArgThrPheSerArgAsnPheLys  
 GlnArgGlnGluIleSerHisProProProAsnThrLeuProGlnLysProTyrLysArg-277

**Hydrophilic Regions** - Hopp-Woods  
 1-MetProProGluAlaArgProAlaGlySerAspGly-12  
 45-ArgAsnHisSerArgAlaGlnHis-52  
 81-MetAspIleArgIle-85  
 91-PheArgIleAspPheLeuAsp-97  
 99-ArgGlyIleLysArg-103  
 236-ThrAsnTrpLysSerLysSer-242  
 248-LysIleArgThrPheSerArgAsnPheLysGlnArgGlnGluIleSerHis-264  
 273-LysProTyrLysArg-277

**g246**

**AMPHI Regions** - AMPHI  
 39-AlaValAsnIleAla-43  
 55-HisValValCysLysArgCysAlaGluValLeuValGluGlnPheAlaAspLeuPhePhe-74  
 83-AspMetGlyArgPhe-87  
 132-PheGlyCysAspAspValValAspAsnLeuAlaGlyPheGlyArgGlyPheArgPro-150

**Antigenic Index** - Jameson-Wolf  
 1-MetTyrGlyArgAsnGlySerThrGln-9  
 17-AspGlnThrGlnArgAlaArgPheGlyAsnGlyGluVal-29  
 46-PheAlaGlyGluSerGlyGln-52  
 57-ValCysLysArgCysAla-62  
 78-AspCysGlyHisHisAspMetGlyArg-86  
 92-LeuAspAspLysLeuAla-97  
 133-GlyCysAspAspValValAsp-139  
 143-GlyPheGlyArgGlyPheArgProVal-151  
 165-LeuGlnGlnArgGly-169

**Hydrophilic Regions** - Hopp-Woods  
 18-GlnThrGlnArgAlaArgPheGlyAsn-26  
 47-AlaGlyGluSerGly-51  
 57-ValCysLysArgCysAla-62  
 92-LeuAspAspLysLeuAla-97

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**AMPHI Regions** - AMPHI  
 34-GlyPheIleGlnArgLeu-39  
 59-ValValSerSerCysSerLysIleAlaLysProGlyLysLysIleSerThrLeuGlnGlu-78  
 105-TyrAlaValGlyArgPheGlyAsn-112  
 164-ArgTyrThrAsnLysPheAspLysSerLys-173

**Antigenic Index - Jameson-Wolf**

1-ProGlyAlaLysGlnGluAsnProLeuPheSerLeuLysArgSerGlyMetAspLysGlnLeu-21  
 26-GluSerIleAspIleAspLysTyr-32  
 48-IleAspAspLeuAspAlaSerAla-55  
 62-SerCysSerLysIleAlaLysProGlyLysLysIleSerThrLeuGlnGluAlaLysSer-81  
 85-IleThrAsnAspAspLysGlnAsnGlyAsnIleThrArgGlnLysHis-100  
 109-ArgPheGlyAsnAsnGluGluSerLeu-117  
 120-PheGlnLeuAspAspLysGlyLysTrpGlyAsn-130  
 136-LysLysValLysArgMetAspVal-143  
 149-SerGlyCysProGluAspGluAspAlaGlyLysGluGluLysPheArgTyrThrAsnLysPheAspLysSer  
 LysAsnAlaValThr-177  
 193-IleAlaAlaSerSerAspAsnSer-200  
 210-IleArgGlyGlyAsnValCysAlaAsnArgThrLeu-221

**Hydrophilic Regions - Hopp-Woods**

1-ProGlyAlaLysGlnGluAsn-7  
 11-SerLeuLysArgSerGlyMetAspLysGlnLeu-21  
 26-GluSerIleAspIleLys-31  
 48-IleAspAspLeuAspAlaSerAla-55  
 64-SerLysIleAlaLysProGlyLysLysIleSerThr-75  
 77-GlnGluAlaLysSer-81  
 86-ThrAsnAspAspLysGlnAsnGlyAsnIleThrArgGlnLysHis-100  
 111-GlyAsnAsnGluGluSerLeu-117  
 121-GlnLeuAspAspLysGlyLysTrpGly-129  
 136-LysLysValLysArgMetAspVal-143  
 151-CysProGluAspGluAspAlaGlyLysGluGluLysPheArgTyr-165  
 167-AsnLysPheAspLysSerLysAsnAlaVal-176  
 193-IleAlaAlaSerSerAspAsn-199  
**g248-1**  
**AMPHI Regions - AMPHI**  
 87-SerGluAsnCysGluLysGlyLeu-94  
 109-GluAlaPheGlyAsn-113  
 122-ValGluAlaValLysArg-127  
 153-AlaAlaGlyValSerLysMetProArgTyrIleIleGlu-165  
 173-GlnAsnValTyrArgValThrAlaLysAlaTrpGlyLysAsn-186

**Antigenic Index - Jameson-Wolf**

1-MetArgLysGlnAsnThrLeuThr-8  
 11-ProThrSerAspGlyGlnArgGlySer-19  
 40-GlnSerTyrAsnThrGluGlnArgIleSerAlaAsnGluSerAspArgLysLeuAla-58  
 64-AlaAlaLeuArgGluGlyGluPheGln-72  
 78-TyrAlaAlaAspSerLysValThrPheSerGluAsnCysGluLysGlyLeu-94  
 101-ArgThrAsnAsnAsnGlySerGluGluAlaPhe-111  
 118-GlyLysProAlaValGluAlaValLysArgSerCysProAlaLysSerGlyLysAsnSerThr-138  
 140-LeuCysIleAspAsnLysGlyMetGluTyrAsnLysGlyAlaAlaGlyValSerLysMetProArgTyrIle  
 -163  
 168-GlyValLysAsnGlyGlnAsnVal-175  
 182-AlaTrpGlyLysAsnAlaAsnThr-189  
 197-ValGlyAsnAsnAspGluGln-203

**Hydrophilic Regions - Hopp-Woods**

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1-MetArgLysGlnAsnThr-6  
 11-ProThrSerAspGlyGlnArgGly-18  
 42-TyrAsnThrGluGlnArgIleSerAlaAsnGluSerAspArgLysLeuAla-58  
 64-AlaAlaLeuArgGluGlyGluPheGln-72  
 78-TyrrAlaAlaAspSerLysValThrPhe-86  
 88-GluAsnCysGluLysGlyLeu-94  
 101-ArgThrAsnAsnAsnGlySerGluAlaPhe-111  
 120-ProAlaValGluAlaValLysArgSerCysProAlaLysSerGlyLysAsnSerThr-138  
 140-LeuCysIleAspAsnLysGlyMetGluTyrAsnLys-151  
 199-AsnAsnAspGluGln-203

**g249-1**

**AMPHI Regions - AMPHI**  
 6-CysLeuArgLeuLys-10  
 15-GlyMetAlaLeuIleGluValLeuVal-23  
 42-ThrValAlaSerValArgGluAla-49  
 53-ThrIleValSerGlnIleThrGlnAsnLeuMetGluGlyMet-66  
 111-GluGlnLeuLysArgPheSerHisGluLeuLysAsnAlaLeu-124

**Antigenic Index - Jameson-Wolf**

1-MetLysAsnAsnAspCysLeuArgLeuLysAsnProGlnSerGly-15  
 44-AlaSerValArgGluAlaGluThr-51  
 70-ProThrIleAspLeuAspSerAsnLysLysAsnTyr-81  
 85-MettGlyLysGlnThr-89  
 93-ValAspGlyGluPhe-97  
 99-LeuAspAlaGluLysSerLysAlaGlnLeuAlaGluGlnLeuLysArgPheSerHisGluLeuLysAsnA  
 laLeu-124  
 134-ValCysLysAspSerSerGlyAspAlaProThrLeuSerAspSerGlyAlaPheSerSerAsnCysAspAsn  
 LysAlaAsnGlyAspThrLeu-164  
 172-AspSerAlaGlyAspSerAspIleSerArgThrAsnLeuGluValSerGlyAspAsn-190  
 197-AlaArgValGlyGlyArgGlu-203

**Hydrophilic Regions - Hopp-Woods**

1-MetLysAsnAsnAspCysLeuArgLeuLysAsnProGln-13  
 44-AlaSerValArgGluAlaGluThr-51  
 72-IleAspLeuAspSerAsnLysLysAsnTyr-81  
 99-LeuAspAlaGluLysSerLysAlaGlnLeuAlaGluGlnLeuLysArgPheSerHisGluLeuLysAsnA  
 laLeu-124  
 134-ValCysLysAspSerSerGlyAspAlaProThrLeuSerAsp-147  
 154-AsnCysAspAsnLysAlaAsnGly-161  
 173-SerAlaGlyAspSerAspIleSerArgThrAsnLeu-184  
 199-ValClyGlyArgGlu-203

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**AMPHI Regions - AMPHI**  
 10-GluPheIleArgGlyIleLysGlu-17  
 54-PheAlaGlyGlySerGlu-59  
 61-AlaThrValAsnLeuTrpAlaGluPro-69

**Antigenic Index - Jameson-Wolf**

3-HisThrAlaSerProArgAspGluPheIleArgGlyIleLysGluSerSerPro-20  
 34-MetGlnGlyGlnLysGlyMetGlyArgLeu-44  
 54-PheAlaGlyGlySerGlu-59

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83-AsnSerArgHisIleLeuMetGlyGlyGly-92  
 95-HisAlaHisGluArgAsnThrAlaGluLysSerArgAlaArg-108

**Hydrophilic Regions - Hopp-Woods**

5-AlaSerProArgAspGlnPheIleArgGlyIleLysGluSerSer-19  
 36-GlyGlyGlnLysGlyMetGlyArg-43  
 95-HisAlaHisGluArgAsnThrAlaGluLysSerArgAlaArg-108  
 g251

**AMPHI Regions - AMPHI**

57-ValAlaAspPheGlyGlyIleGluGlyPhe-66  
 101-ArgThrValGlyGlyThrValArgLeuLeuLysMetIle-113  
 156-AlaArgThrValPheArgAlaHisLeuArg-165  
 179-AlaAlaArgValPheAlaValAla-186  
 200-LeuGlyGlnGluCysArg-205  
 207-ArgHisIleAlaArgValGluSerLeuLeuArgAlaPheGluTyrAla-222

**Antigenic Index - Jameson-Wolf**

21-LeuArgGlyArgPheGlnArg-27  
 48-ValValThrGluValAspAla-54  
 90-ArgLeuValGlyThr-94  
 120-ProValValArgGluAlaGlyIle-127  
 153-VallysHisAlaArgThrValPhe-160  
 196-IleLysAsnArgLeuGlyGlnGluCysArgAsnArgHisIleAlaArgValGluSerLeu-215  
 231-LysThrLysThrArgAlaGluGlnProArgProAla-242

**Hydrophilic Regions - Hopp-Woods**

23-GlyArgPheGlnArg-27  
 48-ValValThrGluValAspAla-54  
 120-ProValValArgGluAlaGlyIle-127  
 153-VallysHisAlaArgThrValPhe-160  
 198-AsnArgLeuGlyGlnGluCysArgAsnArgHisIleAlaArgValGluSerLeu-215  
 232-ThrLysThrArgAlaGluGlnProArgProAla-240  
 g254

**AMPHI Regions - AMPHI**

6-ArgPheAsnThrTyrSerHis-12  
 32-GlyHisGlyAspGlyTyrArg-38  
 66-LysLeuLysSerIleLeuLys-72  
 142-ValLeuAlaValMetLysSerLeuThrAlaSer-152

**Antigenic Index - Jameson-Wolf**

5-GluArgPheAsnThrTyrSer-11  
 32-GlyHisGlyAspGlyTyrArg-38  
 65-GlyLysLeuLysSerIleLeuLysLysThrAspHis-76  
 94-SerLeuArgAsnGlyProGly-100  
 120-ThrIleGlyArgLysSerGluLysArgLeuLeu-130  
 177-AsnAspGluLysIleArgHisGlyHisGly-186

**Hydrophilic Regions - Hopp-Woods**

65-GlyLysLeuLysSerIleLeuLysLysThrAspHis-76  
 120-ThrIleGlyArgLysSerGluLysArgLeuLeu-130  
 177-AsnAspGluLysIleArgHis-183  
 g255

**AMPHI Regions - AMPHI**

23-VallysThrCysAlaAspPheHisAlaPheAspGlyValAspAlaHisHisArg-40  
 71-GlyIleGlnGlyPheAlaHis-77

**Antigenic Index - Jameson-Wolf**

33-AspGlyValAspAlaHisHisArgValGlyAspPheGlyIleGluAlaValGluAsnGlyPheAlaGlnThrA  
spGlyAspValGly-62  
67-PheArgAlaAspGlyIleGlnGly-74  
91-ValGlyGlyLysLysArgIleLeu-98  
115-GlyAsnValGlyGlyAspPheArgAla-123  
130-PhePheGlyAsnGlySerGlyGlyAsnAlaGly-140  
145-GlyGlyThrProAla-149  
168-SerGlyAlaGluGlyGlyAspVal-176

**Hydrophilic Regions - Hopp-Woods**

33-AspGlyValAspAlaHisHisArgValGlyAspPheGly-45  
56-ThrAspGlyAspValGly-62  
67-PheArgAlaAspGly-71  
92-GlyGlyLysLysArgIleLeu-98  
119-GlyAspPheArgAla-123  
169-GlyAlaGluGlyGlyGly-174

**g256-1****AMPHI Regions - AMPHI**

22-AlaLysPheLeuGlnHisPro-28  
95-HisPheArgSerCysGlyGlyValAla-103  
128-ArgTyrArgGluIleTyrAlaVal-135  
143-AlaProAlaLysTyrLeuGlyGluGln-151  
179-GlyIleThrArgLeuLeu-184  
198-ArgSerLeuGlnGlyPheGlnThrAla-206  
208-AlaAlaGlyCysLysThrLeuGlyGluPheAspAspArgPheThrAlaProLeuHisGly-227  
234-TyrTyrArgGlnThrSerCysLysProLeuLeuLysHisValAla-248

**Antigenic Index - Jameson-Wolf**

4-ThrProProAspThrProPhe-10  
12-LeuArgAsnGlyAsnAlaAspThrIleAla-21  
27-HisProAlaProAlaTyrArgArgGluMetLeuProAspSerThrGlyLysThrLysThrAlaTyr-48  
51-SerAlaGlyGlyIleSerProAspAlaPro-60  
68-LeuGluGlySerSerArgSerHisTyr-76  
84-ValArgAsnArgGlyTrpHis-90  
98-SerCysGlyGlyValAlaAsn-104  
113-GlyAspThrAlaGlu-117  
125-LeuThrAlaArgTyrArgGlu-131  
140-GlyAsnAlaProAlaLysTyrLeuGlyGluGlnGlyLysLysAlaLeuPro-157  
167-ValAspAlaGluAlaGlySerArgPheAspSerGlyIle-180  
193-LeuIleProLysAlaArgSerLeuGln-201  
213-ThrLeuGlyGluPheAspAspArgPheThr-222  
228-PheAlaAspArgHisAspTyrTyrArgGlnThrSerCysLysProLeuLeu-244  
259-AspProPheLeuProProGluAlaLeuProArgAlaAspGluAlaSerGlu-275  
283-AlaHisGlyGlyHis-287  
292-SerSerThrGlyGlyArgLeu-298  
312-AspSerPheArgThrAsnArgArg-319

**Hydrophilic Regions - Hopp-Woods**

31-AlaTyrArgArgGluMetLeuPro-38  
40-SerThrGlyLysThrLysThr-46  
69-GluGlySerSerArgSer-74  
84-ValArgAsnArgGly-88  
125-LeuThrAlaArgTyrArgGlu-131

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147-TyrLeuGlyGluGlnGlyLysLysAlaLeuPro-157  
 167-ValAspAlaGluAlaAlaGlySerArgPheAspSerGlyIle-180  
 193-LeuIleProLysAlaArgSer-199  
 213-ThrLeuGlyGluPheAspAspArgPheThr-222  
 228-PheAlaAspArgHisAspTyrTyrArg-236  
 266-AlaLeuProArgAlaAspGluAlaSerGlu-275  
 314-PheArgThrAsnArgArg-319  
**g257**  
**AMPHI Regions - AMPHI**  
 24-SerPheLeuProAsn-28  
 73-AspLeuValAsnLysValLeuAlaGluValAlaArgLeuGluLysMetPhe-89  
 109-SerProProAlaAspPheLeuGluLeuLeuSerLeuAlaAlaIlePheThr-125

**Antigenic Index - Jameson-Wolf**

1-MetGlyArgHisPheGlyArgArgArgPheLeu-11  
 32-AlaGlyGlyGluLysArgAsnMetAspLysLysArgAspGluAsn-46  
 56-GlySerGlyAlaGlu-60  
 65-GlyValAspAspArgGlnAlaAla-72  
 83-AlaArgLeuGluLys-87  
 92-TyrArgGluAspSerLeuIleSerArgLeuAsnArgAspGlyTyrLeuThrSerProProAlaAspPhe-114

**Hydrophilic Regions - Hopp-Woods**

4-HisPheGlyArgArgArgPheLeu-11  
 33-GlyGlyGluLysArgAsnMetAspLysLysArgAspGluAsn-46  
 65-GlyValAspAspArgGlnAlaAla-72  
 83-AlaArgLeuGluLys-87  
 92-TyrArgGluAspSerLeuIle-98

100-ArgLeuAsnArgAspGlyTyr-106

**g259-1**

**Antigenic Index - Jameson-Wolf**  
 34-LysAlaTyrThrGluGluLeuProPro-42  
 62-ValArgSerLysAlaLysAlaGluLysPheTyrArgGluLysMetIleGln-78  
 93-LeuGluHisLysPro-97  
 105-LysAsnHisGlyLysGlyMetAlaGluGlnValArgPheLysAla-119  
 121-ValLeuProAspAspGluAspAlaArgThrIleAla-132  
 144-GlyThrAspAlaValAlaSerGlyGluThrTyrGlyArgVal-157

**Hydrophilic Regions - Hopp-Woods**

35-AlaTyrThrGluGluLeuPro-41  
 62-ValArgSerLysAlaLysAlaGluLysPheTyrArgGluLysMetIleGln-78  
 93-LeuGluHisLysPro-97  
 106-AsnHisGlyLysGlyMetAlaGluGlnValArgPheLysAla-119  
 121-ValLeuProAspAspGluAspAlaArgThrIleAla-132

**g260**

**AMPHI Regions - AMPHI**  
 12-ProPhePheSerLeuPheArgAlaLeuPheGlu-22  
 53-PheIleAspSerValGlyGlnIleThrAlaArgPhePheGlnAlaPhe-68  
 151-GlnTyrLeuAlaArgIleAsnGlnValGlyIleValAspLeuIleProValArg-168  
 177-ThrGlyCysThrGlyIleCysProLysTyrProThrGlyCysArgPro-192

-761-

**Antigenic Index - Jameson-Wolf**

30-GlyAlaHisAspAlaAlaGlu-36  
 80-ProAlaPheArgAlaArgGluGlnAlaArgArgGlySerGly-93  
 97-GlyAsnAspLeuArgValLeuHisLysAspAlaValGluValAspIleAspGlyGlyAsnThrVal-118  
 126-ThrAspPheAspAspGlyAspAla-133  
 139-AlaGluAlaArgPhe-143  
 166-ProValArgAlaProGlnGlyGlyThrIle-175  
 183-CysProLysTyrProThrGlyCysArgProVal-193

**Hydrophilic Regions - Hopp-Woods**

30-GlyAlaHisAspAlaAlaGlu-36  
 82-PheArgAlaArgGluGlnAlaArgArgGlySer-92  
 98-AsnAspLeuArgValLeuHisLysAspAlaValGluValAspIleAspGly-114  
 126-ThrAspPheAspAspGlyAspAla-133  
 139-AlaGluAlaArgPhe-143  
 g261

**AMPHI Regions - AMPHI**  
 19-PheThrPheGlnThr-23

32-AspThrAlaArgAlaPheAlaAlaAla-40  
 50-GlyLeuPheAlaAspVal-55

138-ValHisLysGlyIleGlyAsnAlaValValGlyGlyPheAsp-151  
 164-GlyValValArgAsnLeu-159  
 203-GluGlyAspGlyLeuAspValPheAlaProVal-213  
 217-CysLeuAsnGlnAlaGlyGly-223

**Antigenic Index - Jameson-Wolf**

13-AlaArgSerAspGly-17  
 23-ThrPheArgGlnProAla-28  
 40-AlaAlaAspAspThrLeu-45  
 52-ValArgGlnArgProArgLeuArgLeu-70  
 74-HisGlnArgArgValAspLeu-80  
 86-ArgGlnIleLysGlyAsnValHisGlyPheAspGluHisAla-99  
 111-AlaIleAlaArgAspAspValProAsp-119  
 122-ProPheGlyLysAsnGlyGlyValLysGlnGluLysArgValThrProVal-138  
 149-GlyPheAspGlyGlyPheAspGlyGlyGly-159  
 183-GlnIleLeuArgAspProLeuCysAla-191  
 201-ValSerGluGlyAspGlyLeuAsp-208  
 219-AsnGlnAlaGlyGlyArgIleLeuThrAlaArgGluAspAspGlnGlyPhe-235

**Hydrophilic Regions - Hopp-Woods**

13-AlaArgSerAspGly-17  
 40-AlaAlaAspAspThrLeu-45  
 52-ValArgGlnArgProArgLeuArgLeu-70  
 74-HisGlnArgArgValAspLeu-80  
 94-GlyPheAspGluHisAla-99  
 112-HisIleAlaArgAspAspValProAsp-119  
 127-GlyGlyValLysGlnGluLysArgValThrPro-137  
 202-SerGluGlyAspGlyLeu-207  
 226-LeuThrAlaArgGluAspAspGlnGly-234  
 g263

**AMPHI Regions - AMPHI**  
 32-AsnLeuIleGlyValLeuAlaAsnAla-40  
 42-GluAlaLeuAlaPheTyrGlnGluValGlyLysLeuAsnAlaAlaAsnSerLeuThr-60

65-GluValIleArgIle-69  
 86-LysLeuAlaThrLeuLysLys-92  
 100-AsnAlaAlaArgAlaLeu-105  
 115-LeuGlyAlaLeuAlaAlaPheThrGln-123  
 137-LeuAsnAlaAlaPheLeuGluAla-143  
 157-ValAlaLeuAlaThrLeuCysAsnTyrAlaAsnAsnLeuAla-170

**Antigenic Index - Jameson-Wolf**

10-GluThrAlaProGluAlaAlaLysProArgValGluAlaValProLysAsnAsnGlyPhe-29  
 62-GlyGluValGluVal-66  
 73-ArgThrAsnGlnCysSer-78  
 97-GlnSerLeuAsnAla-101  
 108-GlyLysSerAspAspAlaLysLeu-115  
 126-MetAlaLysLysGlyAlaValSerAspAspGluLeu-137  
 144-GlyIyrAsnArgGlnGlnAla-150  
 172-ThrGluIleAsnProLysLeu-178

**Hydrophilic Regions - Hopp-Woods**

11-ThrAlaProGluAlaAlaLysProArgValGluAlaValProLys-25  
 62-GlyGluValGluVal-66  
 97-GlnSerLeuAsnAla-101  
 108-GlyLysSerAspAspAlaLysLeu-115  
 126-MetAlaLysLysGlyAlaValSerAspAspGluLeu-137  
 g264  
**AMPHI Regions - AMPHI**  
 28-ValValLysProGluLys-33  
 40-ArgSerTyrValAlaGluPheThrGlnThrGly-51  
 85-IleProSerHisValArgVal-91  
 113-AsnArgIleIleAspValSer-119  
 172-LeuAsnGlnAlaAlaGlnAsnPhe-179

**Antigenic Index - Jameson-Wolf**

27-AlaValValLysProGluLysLeuHisAlaSerAlaAsnArgSerTyrLys-43  
 48-ThrGlnThrGlyAsnAlaSerTrp-55  
 57-GlyGlyArgPheHisGlyArgLysThrSerGlyGlyAspArgTyrAsp-72  
 91-ValThrAsnThrLysAsnGlyLysSerVal-100  
 103-ArgValAsnAspArgGlyProPheHisGlyAsnArgIleIleAspValSerLysAlaAlaAla-123  
 142-ValProGlyGlnSerAlaProValAlaGluAsnLysAspIlePheIle-157  
 159-LeuLysSerPheGlyThrGluHisGluAla-168  
 181-AlaSerSerSerProAsnLeuSerValGluLysArgArgTyrGluTyr-197  
 205-AlaSerGlnGluArgAlaAlaGluAlaGluAlaGlnAla-217

**Hydrophilic Regions - Hopp-Woods**

27-AlaValValLysProGluLysLeuHisAlaSerAlaAsnArgSerTyrLys-43  
 60-PheHisGlyArgLysThrSerGlyGlyAspArgTyrAsp-72  
 92-ThrAsnThrLysAsnGlyLys-98  
 104-ValAsnAspArgGlyProPheHis-111  
 114-ArgIleIleAspValSerLysAlaAlaAla-123  
 148-ProValAlaGluAsnLysAspIlePheIle-157  
 160-LysSerPheGlyThrGluHisGluAla-168  
 188-LeuSerValGluLysArgArgTyrGluTyr-197  
 205-AlaSerGlnGluArgAlaAlaGluAlaGluAlaGlnAla-217  
 g266

**Antigenic Index - Jameson-Wolf**

2-GlnPheArgArgHisArgArgGlnCysProAsnArgLysProIle-17

-763-

47-AlaLeuLysArgLysHisPhe-53  
 76-SerArgAlaGlyAla-80  
 110-TrpHisThrArgAsnArgGlu-116

**Hydrophilic Regions - Hopp-Woods**

2-GlnPheArgArgHisArgArgGlnCysProAsnArgLysProIle-17

47-AlaLeuLysArgLysHisPhe-53

76-SerArgAlaGlyAla-80

**g268-1**

**AMPHI Regions - AMPHI**

42-GluIleLeuValLysLeuValArg-49

57-ValLysThrPheAspAsp-62

77-HisIleArgArgMetValGluArg-84

92-ValArgThrThrGluLysThr-98

129-IleGlyAsnSerHisLys-134

136-ThrProAspPheGluProTyr-143

169-PheAlaLeuSerGlnAlaHisAspIleIleHisProLeuSerGluLeuValSerMet-188

191-IleLysGluProLeuAspIys-197

215-AlaArgGluAlaGluGluAlaAla-222

231-GlnGluAlaAlaArgValSerGluTrp-239

249-GluPheGluGlnPheTrpLysGlyLeuProGlnThrValGlnAsn-263

268-SerGlnLysThrTrpLysSerGlyMetAspLys-278

289-GluThrProAsnGlyIleLys-295

**Antigenic Index - Jameson-Wolf**

1-MetLysLysAsnLeu-5

16-LeuSerGlyCysAspArgLeuGlyIleGlyAsnProPheSerGlyLysGluIleSerCysGlySerGluGluThrLysGluIleLeu-44

47-LeuValArgAspAsnValGluGlyGluThrValLysThrPheAspAspAspAlaPheLysAspGlnAlaPhe-70

77-HisIleArgArgMetValGlu-83

85-LeuGlyIleThrValAspGluValArgThrThrGluLysThrAspThrSerSerLysLeuLysCysGluAlaAlaLeu-110

112-LeuAspValProAspAspValVal-119

127-GlnSerIleGlyAsnSerHisLysLysThrProAspPhePhe-140

143-TyrTyrArgLysGluGlyAlaTyr-150

158-SerValGlnProThrAspAspLysSerLysIle-168

190-LeuIleLysGluProLeuAspLysAlaLysGlnArgAsnGluLysLeuGluAlaAlaGluAlaThrAlaGlnGluAlaArgGluAlaGluGluAlaAla-223

226-AlaIeuGlyArgGluGlnGluAlaAlaArgValSerGluTrpGluGluArgTyrLysLeuSerArgSerGluPhe-250

261-ValGlnAsnLysLeuGlnAlaSerGlnLysThrTrpLysSerGlyMetAspLysIleCysAlaAsnAsnAlaLysAlaGluGlyGluThrProAsnGlyIleLysValSerGluLeuAlaCysLysThrAlaGluThrGluAlaArgLeuGluGluLeuHisAsnArgLysLysAlaLeuIle-321

323-GluMetValArgGluGluAspLysLysGluLeuProLysArgLeu-337

**Hydrophilic Regions - Hopp-Woods**

1-MetLysLysAsnLeu-5

18-GlyCysAspArgLeuGly-23

28-PheSerGlyLysGluIleSerCysGlySerGluGluThrLysGluIleLeu-44

-764-

47-LeuValArgAspAsnValGluGlyGluThrValLysThrPheAspAspAspAlaPheLysAspGlnAlaPhe-  
 70  
 77-HisIleArgArgMetValGlu-83

85-LeuGlyIleThrValAspGluValArgThrThrGluLysThrAspThrSerSerLysLeuLysCysGluAlaA  
 laLeu-110  
 112-LeuAspValProAspAspValVal-119  
 131-AsnSerHisLysLysThrProAspPhe-139  
 143-TyrTyrArgLysGluGly-148  
 161-ProThrAspAspLysSerIle-168  
 190-LeuLysGluProLeuAspLysAlaLysGlnArgAsnGluLysLeuGluAlaAlaGluAlaThrAlaGln  
 GluAlaArgGluAlaGluAlaAlaAla-223  
 226-AlaLeuGlyArgGluGlnGluAlaAlaArgValSerGluTrpGluGluArgTyrLysLeuSerArgSerGlu  
 Phe-250

270-LysThrTrpLysSerGlyMetAspLysIleCys-280  
 283-AsnAlaLysAlaGluGlyGluThrProAsn-292

294-IleLysValSerGluLeuAlaCysLysThrAlaGluThrGluAlaArgLeuGluGluLeuHisAsnArgLys  
 LysAlaLeuIle-321  
 323-GluMetValArgGluGluAspLysLysGluLeuProLysArgLeu-337

**g269**

**AMPHI Regions** - AMPHI  
 36-LysProCysAlaSerIleAspAlaSerSerAla-46  
 54-TrpAspPheIleArgAsnThrAlaSerPro-63  
 73-PheLysThrArgAlaLeuGlyArgPheSerAla-82

**Antigenic Index** - Jameson-Wolf

28-TrpSerArgSerAlaPheSerCysLysProCysAla-39  
 58-ArgAsnThrAlaSerProLysVal-65  
 73-PheLysThrArgAlaLeuGlyArgPheSerAla-83  
 90-LeuSerAsnArgGlyValLysProLeuSerPheLysSerProSerValGlnValAspThrSerAla-112  
 117-SerLeuArgSerSer-121

**Hydrophilic Regions** - Hopp-Woods

60-ThrAlaSerProLysVal-65  
 73-PheLysThrArgAlaLeuGly-79  
 93-ArgGlyValLysLysProLeuSer-100  
**g270**

**AMPHI Regions** - AMPHI  
 13-LeuLeuThrAlaPheAlaAlaPhe-20  
 41-AspLeuThrGluGlyCys-46  
 49-ProAspGlySerArg-53

**Antigenic Index** - Jameson-Wolf

1-MetAsnLysAsnArgLysLeu-7  
 41-AspLeuThrGluGlyCysThrLeuProAspGlySerArgValArgAlaAlaAlaValSerThrLysLysProP  
 he-65  
 71-HisAlaProAlaGlyThrGlu-77  
 86-LysAsnMetAspMetGlyPhe-92  
 95-TyrMetPheGluArgGlnProSerGlyThr-104  
 114-ValCysValGluGlyArgArgAspPheThrAla-124  
 128-IleGlySerArgThrPhe-133

**Hydrophilic Regions** - Hopp-Woods

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1-MetAsnLysAsnArgLysLeu-7  
 49-ProAspGlySerArgValArgAla-56  
 60-SerThrLysLysProPhe-65  
 73-ProAlaGlyThrGlu-77  
 96-MetPheGluArgGlnPro-101  
 116-ValGluGlyArgArgAspPheThrAla-124  
**g271-2**

**AMPHI Regions - AMPHI**  
 6-MetAlaArgIleTrp-10  
 20-SerProCysProAla-24  
 29-ProLysSerProAla-33

**Antigenic Index - Jameson-Wolf**  
 2-PheSerSerArgMetAlaArg-8  
 25-LeuThrThrLysProLysSerProAlaLys-34  
 41-ArgSerAsnCysLeu-45  
 61-SerSerThrThrGlyAlaProThrSerArg-70  
 78-SerAlaSerIleAsnLysAspThrArgMetProAlaSerVal-91  
 102-CysCysAlaAsnThrSerLysProProSer-111

**Hydrophilic Regions - Hopp-Woods**  
 27-ThrLysProLysSerProAlaLys-34  
 80-SerIleAsnLysAspThrArgMet-87  
 105-AsnThrSerLysProPro-110  
**g272-2**

**AMPHI Regions - AMPHI**  
 44-IleThrArgIleThrAspGlu-50  
 70-AlaGluGluPheSerSerThrAsn-77  
 106-PheArgAlaIleThrSer-111  
 165-IleIleThrIleGluAspProIleGlu-173  
 194-AsnTrpMetAlaAlaLeuLysAsnThrLeuArgGlnAla-206  
 244-AsnGlnAlaLeuAspArgIleIleAsn-252  
 307-GlyAsnIleHisGluIleLysGluValMetLys-317  
 328-AspGlnHisLeuTyrGln-333  
 343-GlnAspAlaLeuLysAsnAlaAspSer-351

**Antigenic Index - Jameson-Wolf**  
 2-PheThrAspGluAsnMetThrAlaLysGluGluLeu-13  
 19-HisMetAsnLysAsnLysGlySerAsp-27  
 38-MetLysLeuAspGlyLysIleThrArgIleThrAspGluProLeuThrAlaGluLysCysMet-58  
 68-LysGlnAlaGluGluPheSerSerThrAsnGlu-78  
 85-LeuProAspThrSerArgPheArgVal-93  
 109-IleThrSerLysIleProLysPheGluSerLeuAsn-120  
 122-ProProAlaLeuLys-126  
 128-ValAlaLeuLysLysArgGly-134  
 142-ThrGlySerGlyLysSerThrSerLeu-150  
 154-IleAspTyrArgAsnGluAsnSerPheGly-163  
 168-IleGluAspProIle-172  
 176-HisGluHisLysAsnCys-181  
 184-ThrGlnArgGluValGlyValAspThrGluAsn-194  
 199-LeuLysAsnThrLeuArgGlnAlaProAsp-208  
 214-GluIleArgAspArgGluThrMet-221  
 241-AsnSerThrAsnGlnAlaLeuAspArg-249  
 254-PheProGluGluArgArgGluGlnLeuLeu-263  
 278-LeuValProArgAspGlyGlyLysGlyArgValAlaAla-290

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310-HisGluIleLysGluValMetLysLysSerThr-320  
 336-GluLysGlyGluIleSerLeu-342  
 344-AspAlaLeuLysAsnAlaAspSerAlaHisAspLeu-355  
 361-LeuArgSerArgArgAlaGlnSerSerAspProAspLeuGluLeu-375

**Hydrophilic Regions - Hopp-Woods**

2-PheThrAspGluAsnMetThrAlaLysGluGluLeu-13  
 20-MetAsnLysAsnLysGlySerAsp-27  
 38-MetLysLeuAspGlyLysIleThrArgIleThrAspGluProLeuThrAlaGluLysCysMet-58  
 68-LysGlnAlaGluGluPheSerSer-75  
 87-AspThrSerArgPheArgVal-93  
 112-LysIleProLysPheGluSer-118  
 128-ValAlaLeuLysLysArgGly-134  
 143-GlySerGlyLysSerThrSer-149  
 155-AspTyrArgAsnGluAsnSer-161  
 168-IleGluAspProIle-172  
 176-HisGluHisLysAsn-180  
 184-ThrGlnArgGluValGlyValAspThr-192  
 201-AsnThrLeuArgGlnAlaPro-207  
 214-GluIleArgAspArgGluThrMet-221  
 245-GlnAlaLeuAspArg-249  
 255-ProGluGluArgArgGluGlnLeuLeu-263  
 278-LeuValProArgAspGlyGlyLysGlyArgValAlaAla-290  
 310-HisGluIleLysGluValMetLysLysSerThr-320  
 336-GluLysGlyGluIleSerLeu-342  
 344-AspAlaLeuLysAsnAlaAspSerAlaHisAspLeu-355  
 361-LeuArgSerArgArgAlaGlnSerSerAspProAspLeuGluLeu-375  
**g274**  
**AMPHI Regions - AMPHI**  
 31-TyrLysAspGlyLys-35  
 111-GluAlaValPheLys-115

**Antigenic Index - Jameson-Wolf**

25-LeuValThrAspAspTyrTyrLysAspGlyLysHisIleAsp-38  
 40-GlnLeuHisArgAspGluGluAlaValArgArgHisIle-52  
 60-ProAspMetAsnAla-64  
 71-GlyGluPheAspGlyLysGlnPro-78  
 85-HisProThrArgLysAlaAspAspGlnThrVal-95  
 99-ProValGlySerAlaGlnAsnGlyArgAlaGluTyr-110  
 116-ThrLeuProAlaAsnHis-122  
 126-ArgValGluAspAlaAlaGly-132  
 136-ValGluAsnLysTrpIleThrSerGlnGlyAsnAlaValAspLeuThrProMetAspLysLeuPheAsnAsnAlaGlySerLys-163

**Hydrophilic Regions - Hopp-Woods**

29-AspTyrTyrLysAspGlyLysHisIleAsp-38  
 40-GlnLeuHisArgAspGluGluAlaValArgArgHisIle-52  
 72-GluPheAspGlyLysGln-77  
 86-ProThrArgLysAlaAspAspGlnThrVal-95  
 104-GlnAsnGlyArgAlaGluTyr-110  
 126-ArgValGluAspAlaAlaGly-132  
 151-ThrProMetAspLysLeuPhe-157  
**g276**  
**AMPHI Regions - AMPHI**  
 19-ArgArgTrpAlaThrMetMet-25

60-SerPheLysMetAlaArg-65  
 80-ProPheAspProMetGlyTrp-86  
 115-GlyArgLeuTyrArgThrPheSerAsn-123  
 164-ThrLysArgGlyArgArgLeuThr-171  
 207-SerThrSerThrLeuArgLysLeuMetArgProSerThr-219

**Antigenic Index - Jameson-Wolf**  
 9-MetMetArgSerAlaAspSerThrVal-17  
 29-PheSerIleArgArgSerSerAlaCysTrpThrArgArgSerAspSerLeuSer-46  
 52-SerSerAsnAsnAsnIle-57  
 67-MetAlaThrArgCysArgCysProProAspLysLeuLeuPro-80  
 82-AspProMetGlyTrp-86  
 88-SerProSerGlyAspAlaSerIleArg-96  
 103-TrpArgAlaAspArgThrSerAlaSerProAlaSerGlyArgLeuTyr-118  
 121-PheSerAsnArgValSerSerAsnArgAsnThrSerTrpGluThrArgAlaAsnTrpAlaArgArgGlnSer  
 SerLeu-146  
 158-LeuProAlaAspGlySerThrLysArgGlyArgArgLeuThrThr-172  
 176-ProLeuProGluArgProThrArgAlaThrArgSerProCysLeu-190  
 194-LeuLysLeuSerArg-198  
 200-LeuMetProSerGluArgTyrSerThrSerThrLeuArgLysLeuMetArgProSerThrArgCysGlyAla  
 -223  
 229-CysSerGlyGlyValSerArgAsnAlaHisThrProSerAlaAlaArgAsn-245

**Hydrophilic Regions - Hopp-Woods**  
 29-PheSerIleArgArgSerSer-35  
 38-TrpThrArgArgSerAspSerLeu-45  
 67-MetAlaThrArgCysArgCysProProAspLys-77  
 90-SerGlyAspAlaSerIleArg-96  
 104-ArgAlaAspArgThrSerAla-110  
 124-ArgValSerSerAsnArgAsnThrSerTrpGluThr-135  
 137-AlaAsnTrpAlaArgArgGlnSerSer-145  
 161-AspGlySerThrLysArgGlyArgArgLeuThrThr-172  
 176-ProLeuProGluArgProThrArgAlaThrArg-186  
 194-LeuLysLeuSerArg-198  
 200-LeuMetProSerGluArgTyrSer-207  
 210-ThrLeuArgLysLeuMetArgProSerThrArgCys-221  
 232-GlyValSerArgAsnAlaHis-238  
 g277-2

**AMPHI Regions - AMPHI**  
 39-GlyIleAlaValPheGluValValGlyArgLeuLeuAspPheValLeu-54  
 72-AsnGluValIleAspValPheHisAlaLeuGln-82  
 87-AlaPheAspAlaValGlyAsnPheAlaGluTyrGlyArgAlaIleAspThrAlaAspLeuGluIleGlyL  
 ysLeuGlyTyrPheHis-116  
 180-AlaValGlyValValAlaValAla-187

**Antigenic Index - Jameson-Wolf**  
 1-MetProArgPheGluAspGlnLeuValGlyArgXxxGlyLysAla-15  
 68-ArgPheCysProAsnGluVal-74  
 96-GluTyrGlyArgAlaIleAspThr-103  
 118-GluGluProAspPheProAlaGlnThrProArgThrGluGlyGly-132  
 138-PheAspLysAlaAspValVal-144  
 162-AspIleGlyGlyGlyGlyPheGluGlyAspLeu-172  
 196-LeuAspValGlyGlyLysProArgLeuGlyAlaGluArgAlaGlnAlaGlyGlyMetGlyCysAlaGly  
 ThrAspPheHis-223  
 226-GlyLeuAspAspGlyAla-231

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237-GluGlyLeuGlnPheGluAspAspLeuLeuGluGlyLysHisGlyLeu-252

**Hydrophilic Regions - Hopp-Woods**

2-ProArgPheGluAspGlnLeuVal-9  
 96-GluTyrGlyArgAlaIleAspThr-103  
 118-ValGluProAspPhe-122  
 126-ThrProArgThrGluGly-131  
 138-PheAspLysAlaAspValVal-144  
 167-GlyPheGluGlyAspLeu-172  
 198-ValGlyGlyLysProArgLeuGlyAlaGluArgAlaGlnAla-211  
 226-GlyLeuAspAspGlyAla-231  
 239-LeuGlnPheGluAspAspLeuLeuGluGlyLysHisGlyLeu-252  
 g278-2

**AMPHI Regions - AMPHI**

20-IleGlyProLeuProSerIleGlyArg-28  
 42-ThrGlyThrSerLys-46  
 101-ArgThrIleProSerValThrGluIleThrValProArgValLeuThrSerAlaPhe-119  
 123-PheSerIleLeuAlaLeuIleArgSerLeuIleSer-134  
 157-LeuTyrArgGlnIleGlnAsnIleIleThrHisPheAsnPheTyrAlaAla-173  
 189-GluThrLeuIleGlnHisLeuArgGlnLeuAlaAsp-200

**Antigenic Index - Jameson-Wolf**

25-SerIleGlyArgProAsnAlaSerThrThrArgProThrAsnSerArgProThrGlyThrSerLysIleArgPro-49  
 63-SerProAsnThrThrAlaProThrGluSerArgSerArgPheIleAla-78  
 80-ProLysValLeuProGlyAsnSerSerIle-89  
 93-IleAlaSerAspLysProTrpMetArg-101  
 119-PheThrAspArgPheSer-124  
 146-ArgHisSerArgValGlnSerThr-153  
 178-PheAspPheAspArgAspPheGlnLeu-186  
 209-ThrValAsnAspGlyArgPheAspMetValGlu-219

**Hydrophilic Regions - Hopp-Woods**

27-GlyArgProAsnAlaSerThrThrArgProThrAsnSerArgProThrGlyThrSerLysIleArgPro-49  
 68-AlaProThrGluSerArgSerArgPheIleAla-78  
 93-IleAlaSerAspLysProTrp-99  
 146-ArgHisSerArgValGln-151  
 178-PheAspPheAspArgAspPhe-184  
 211-AsnAspGlyArgPheAspMetValGlu-219  
 g279

**AMPHI Regions - AMPHI**

6-GlyCysLeuIleSer-10  
 58-LeuProAlaIleThrThr-63

**Antigenic Index - Jameson-Wolf**

28-GlnTrpGluGlyThrAspThrGlySerGlyArgAlaArgLeuAla-42  
 64-CysProGlyGluLeuLysLeuThr-71  
 74-ThrThrSerProCysAlaAspSer-81  
 88-CysSerSerSerLysProLysMet-95  
 102-ProCysGlyThrAlaAspCysIleSerSerAlaArgArgArgThrSerLeu-118  
 120-AlaSerAlaLysSerAsnAlaSer-127  
 148-ProProThrSerLys-152

**Hydrophilic Regions - Hopp-Woods**

29-TrpGluGlyThrAspThrGlySerGlyArgAlaArgLeuAla-42

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66-GlyGluLeuLysLeu-70  
 89-SerSerSerLysProLysMet-95  
 110-SerSerAlaArgArgArgThrSerLeu-118  
 120-AlaSerAlaLysSerAsnAla-126  
**g280**  
**AMPHI Regions - AMPHI**  
 27-SerPheSerIleLeuGlyAspValAlaLys-36  
 64-AspIleLysLysIleArgSerAla-71  
 85-AspIleGlnArgAlaValLys-91  
 97-TyrAlaGluAlaThrLysGlyIleGlnProLeuLys-108  
 150-AspTyrAlaGlnAsnValAlaGluThrLeuIleLys-161  
 237-ValAlaAlaIleIleArgGlnIleLys-245  
 247-GluGlyIleLysAlaValPheThrGlu-255  
 258-LysAspThrArgMetValAspArgIleAlaLysGluThr-270  
 278-LeuTyrSerAspAlaLeuGlyAsnAlaProAlaAspThrTyrIle-292

**Antigenic Index - Jameson-Wolf**  
 38-IleGlyGlyGluArgValAla-44  
 51-AlaAsnGlnAspThrHis-56  
 61-ThrSerGlyAspIleLysLysIleArgSerAlaLys-72  
 82-GluAlaAlaAspIleGlnArgAlaValLysGlnSerLysValSerTyrAlaGluAlaThrLysGlyIleGln-105  
 107-LeuLysAlaGluGluGluGlyGlyHisHisHisAspHisHisAspHisAspHisAspHisGluGlyHis  
 HisHisAspHisGlyGluTyrAspProHisValTrpAsnAspProValLeu-147  
 158-ThrLeuIleLysAlaAspProGluGlyLysValTyrTyr-170  
 180-GlnLeuLysLysLeuHisSerAspAla-188  
 196-ProAlaAlaLysArgLysValLeuThr-204  
 212-MetGlyAsnArgTyr-216  
 224-GlnGlyValSerSerGluAlaGluProSerAlaLysGln-236  
 242-ArgGlnIleLysArgGluGlyIle-249  
 255-GluAsnIleLysAspThrArgMetValAspArgIleAlaLysGluThrGlyVal-272  
 274-ValSerGlyLysLeuTyrSer-280  
 286-AlaProAlaAspThr-290  
 295-TyrArgHisAsnVal-299

**Hydrophilic Regions - Hopp-Woods**  
 38-IleGlyGlyGluArgValAla-44  
 63-GlyAspIleLysLysIleArgSerAlaLys-72  
 82-GluAlaAlaAspIleGlnArgAlaValLysGlnSerLys-94  
 99-GluAlaThrLysGly-103  
 107-LeuLysAlaGluGluGluGlyGlyHisHisHisAspHisHisAspHisAspHisAspHisGluGlyHis  
 HisHisAspHisGlyGluTyrAsp-138  
 158-ThrLeuIleLysAlaAspProGluGly-166  
 180-GlnLeuLysLysLeuHisSerAspAla-188  
 196-ProAlaAlaLysArgLysValLeuThr-204  
 226-ValSerSerGluAlaGluProSerAlaLysGln-236  
 242-ArgGlnIleLysArgGluGlyIle-249  
 255-GluAsnIleLysAspThrArgMetValAspArgIleAlaLysGluThrGlyVal-272  
**g281**

**AMPHI Regions - AMPHI**  
 62-AlaAlaGlyMetLeuMetAlaLeuLeuAlaGlyLeuValSerArgPhe-77  
 126-LeuGlnLeuIleAlaAlaValSerGlyLeuThr-136  
 179-LeuValSerGlyPheGlnAlaLeuGlyIleLeu-189  
 216-SerValLeuIleAlaLeuPheCysGlyLeuIleGlyLeu-228

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**Antigenic Index - Jameson-Wolf**

25-ArgArgMetSerLeu-29  
 78-ThrThrLeuLysGluAspAlaAsn-85  
 102-SerLysAsnGlySerSerVal-108  
 158-LysSerValasnGlyLysGlyGly-165  
 236-IleProSerGlyPro-240  
 256-LeuGlyLysGluGlyGlyIle-262  
 266-TrpPheLysAsnHisArgHisHisThrThr-275

**Hydrophilic Regions - Hopp-Woods**

25-ArgArgMetSerLeu-29  
 78-ThrThrLeuLysGluAspAlaAsn-85  
 103-LysAsnGlySerSer-107  
 256-LeuGlyLysGluGlyGlyIle-262  
 270-HisArgHisHisThr-274  
**g282**

**AMPHI Regions - AMPHI**

10-LeuIleValAlaLeuLeuLeuIleAsnProPheSerAlaLeu-24  
 50-ValPheAlaValIleAlaValPheAlaLeuIleGlyGlyAlaLeu-64  
 112-ArgProAlaArgAsn-116  
 176-ValSerArgLeu-180  
 186-ThrIleLeuAsnArgIleMetGlyMet-194

**Antigenic Index - Jameson-Wolf**

31-ThrAsnGlyHisSerThrLysGluArgArgLysValAlaArg-44  
 92-AsnGlyAsnAspAsnProAlaLysGlnAsnLeuGlyAlaGlnProGluThrGlyGlnAlaArgProAlaArgA  
 snAlaGly-118

**Hydrophilic Regions - Hopp-Woods**

34-HisSerThrLysGluArgArgLysValAlaArg-44  
 92-AsnGlyAsnAspAsnProAlaLysGlnAsnLeu-102  
 104-AlaGlnProGluThrGlyGlnAlaArgProAlaArgAsn-116  
**g283**

**AMPHI Regions - AMPHI**

32-GlyGlyAsnSerTyrSerAspValProLysGlnLeuHis-44  
 48-SerGlnIleLeuAsnLeu-53

**Antigenic Index - Jameson-Wolf**

28-TrpLysAspGlyGlyGlyAsnSerTyrSerAspValProLysGlnLeuHisProAspGlnSerGln-49  
 55-ThrLeuGlnThrLysProAlaValGlyGlyAsnSerTyrSerAspValProLysGlnLeuHisProAspGlnSerGlnG  
 luLysAspIleAlaGluLysAsnGlyGlnLeuGluGluGluLysLysIleAlaGluThrGluArgGlnAsnLy  
 sGluGluAsnCysArgIleSerLysMetAsnLeu-115  
 119-GlyAsnSerAsnAlaLysAsnLysAspAspLeuIleArgLysTyrAsnAsnAlaValAsnLysTyrCysArg  
 -142

**Hydrophilic Regions - Hopp-Woods**

35-SerTyrSerAspValProLys-41  
 43-LeuHisProAspGlnSerGln-49  
 60-ProAlaValLysProLysProAlaValAspThrAsnAlaAspSerAlaLysGluAsnGluLysAspIleAlaG  
 luLysAsnCysGlyGlnLeuGluGluGluLysLysIleAlaGluThrGluArgGlnAsnLysGluGluAsnCysAr  
 gIleSerLysMetAsnLeu-115  
 121-SerAsnAlaLysAsnLysAspAspLeuIleArgLysTyrAsnAsnAlaValAsnLysTyrCysArg  
**g284-2**

**AMPHI Regions - AMPHI**

43-GluAlaPheAlaGlyPhePheGluThrVal-52

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61-ThrPheAlaAlaArgPhe-66  
 125-ValAspPheAspValPhe-130  
 154-ValValPheArgLeuPheArgGln-161  
 174-AsnThrAlaCysGlyAsnValGlyGly-182  
 186-PheAlaAlaAlaPhe-190  
 216-PheValGlnPheIleArgAspAspPheGlyHisArg-227  
 277-PheArgValPheGlyGlnPheAlaArgGlnPheAlaAspCysAlaVal-292  
 310-AspGlyPheAspValValAspLys-317  
 342-LeuHisGlnValArgGlnThrAlaArgSerGlyAspAsnGlnIleAspArgPheAlaGln-361  
 381-AlaAlaHisIlePheGly-385  
 387-ArgGlnCysValPhe-391  
 408-ArgAlaPheAlaArgPhePheAlaAlaPheGlyGlnSerLeuGlnSer-423

**Antigenic Index - Jameson-Wolf**

1-MetProSerGluThrArgAsnArgPhe-9  
 107-HisAlaPheAspGlyGlnPhe-113  
 132-HisPheGlyLysArgAsnArgAsnThrArgAla-142  
 147-GlyAlaProAspAlaVal-152  
 167-ValGlyAsnGlyArgTyrVal-173  
 178-GlyAsnValGlyGlyAsnGlnAsn-185  
 192-GlnIleArgGlnArgAlaVal-198  
 209-AlaValGlyGlyIle-213  
 219-PheIleArgAspAspPheGlyHisArgPheGlyGlyArgGluAsnHisThr-235  
 292-ValProSerGlyGlyGluGlnXxxSer-300  
 303-ValGlyArgGlyGlyPheHisAspGlyPheAspValValAspLysAlaHis-319  
 346-ArgGlnThrAlaArgSerGlyAspAsnGlnIleAspArgPheAla-360  
 362-GlyAlaGlyLeuValAlaGluArgCysAlaAlaAspAspAlaAspGlyAlaGluPro-380  
 393-AspLeuArgGlnPheAlaGlyArgCysGlnHisGlnArgAlaArgAla-409  
 419-GlnSerLeuGlnSerArg-424

**Hydrophilic Regions - Hopp-Woods**

1-MetProSerGluThrArgAsnArgPhe-9  
 134-GlyLysArgAsnArgAsnThrArgAla-142  
 193-IleArgGlnArgAlaVal-198  
 220-IleArgAspAspPheGlyHis-226  
 228-PheGlyGlyArgGluAsnHisThr-235  
 294-SerGlyGlyGluGlnXxx-299  
 313-AspValValAspLysAlaHis-319  
 346-ArgGlnThrAlaArgSerGlyAspAsnGlnIleAspArgPheAla-360  
 366-ValAlaGluArgCysAlaAlaAspAspAlaAspGlyAlaGlu-379  
 393-AspLeuArgArgGlnPheAla-399  
 402-CysGlnHisGlnArgAlaArgAla-409  
 g285-1

**AMPHI Regions - AMPHI**

15-ValCysPheLeuGly-19  
 34-GlnIleProSerTrp-38  
 50-GlyThrLeuLeuAspGlyPheAsp-57  
 115-GlnGlyLeuProAspSerIleAspLeuPro-124

208-HisSerThrAlaArg-212

240-HisProPheAlaGluSerLeuAspLysThrLeuGluGluValLeu-254  
 266-ValProSerLeuPro-270  
 280-AlaIleProSerPheSerAsp-286

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313-GlnValLeuGlyGly-317  
 592-IleGlyLysAlaAlaAspIle-598  
 671-GlyIleAsnArgGluLeuThrArgTrp-679  
 745-LeuHisIleAlaGluLeuHisAsnPhePheLysProProPhe-758  
 836-PheGlyGlyAsnMetIlaAsn-842  
 848-ArgIleThrAlaSerLeu-853  
  
 855-AspLeuGlyAlaLeu-859  
 868-GlnAsnIleThrGlySer-873  
 955-GlySerIleAlaasp-959  
 1008-ThrAlaGluLeuSer-1012  
 1061-ValThrGlyMetIleLys-1066  
 1137-GlyAsnValArgGlyValGlyThrValArg-1146  
 1165-ThrValSerPheValGlyProLeuAsn-1173  
 1190-AlaGlyValGluIleLeuGlySerLeuAsn-1199  
 1244-LeuAlaGlyGlnIle-1248  
 1305-ValLysLeuIleTyrArgLeuThrArgAlaIleGlnAlaValAlaArgIleGlySer-1323  
 1335-ArgPheAspArgLeuPheGly-1341

**Antigenic Index - Jameson-Wolf**

43-IleSerSerGlnAsnLeuLysGlyThrLeuLeuAspGlyAspGlyAspAsnTrpSerIleGluThrGluGlyAlaAspLeuLysIleSerArg-74  
 80-LysProSerGluLeuMetArgArgSerLeuHis-90  
 104-LysProThrProProLysGluGluArgProProGlnGlyLeuProAspSerIleAsp-122  
 130-AspArgPheGluThrGlyLysIleSerMetGlyLysThrPheAspLysGlnThrValTyr-149  
 157-TyrArgTyrAspArgLysGlyHisArgLeuAspLeuLysAlaAlaAspThrProTrpSerSerSerGlySerAla-182  
 185-GlyLeuLysLysProPheAla-191  
 198-ThrLysGlyGlyPheGluGlyGluThrIle-207  
  
 209-SerThrAlaArgLeuSerGlySerLeuLysAspValArgAla-222  
  
 224-LeuThrIleAspGlyGlyAsnIleArgLeuSerGlyLysSer-237  
 244-GluSerLeuAspLysThrLeuGlu-251  
  
 268-SerLeuProAspAla-272  
  
 292-GlySerLeuAspLeuGluAsnThrLys-300  
 302-GlyPheAlaAspArgAsnGlyIleProVal-311  
 320-IleArgGlnAspGlyThrVal-326  
 337-GlyArgGlyGlyIleArgLeuSerGlyLysIleAspThrGluLysAspIleLeu-354  
 362-SerValGlyAlaGluAspValLeu-369  
 372-AlaPheLysGlyArgLeuAspGlySerIle-381  
 386-ThrThrAlaSerProLysIle-392  
 397-GlyThrGlyThrAlaArgThrAspGlySerLeu-407  
 411-SerAspProAlaAsnGluGlnArgLysLeuVal-421  
 428-SerAlaGlyGluGlySerLeuThr-435  
 442-LeuPheLysAspArgLeuLeuLysLeuAspIleArgSerArgAlaPheAspProSerArgIleAspProGlnPheProAlaGlyAspIleAsnGly-473  
 480-GluLeuAlaLysGluLysPheThrGlyLys-489  
 508-IleValTyrGluSerArgHisLeuProArgAlaAlaVal-520  
 522-LeuArgLeuGlyArgAsnIleValLysThrAspGlyGlyPheGlyLysLysGlyAspArgLeuAsn-543  
 548-AlaProAspLeuSerArgPheGly-555

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563-AsnValArgGlyHisLeuSerGlyAspLeuAspGlyGlyIleArgThrPheGluThrAspLeuSerGlyThr  
AlaArg-588  
594-LysAlaAlaAspIleArgSer-600  
605-LeuLysGlySerProGlyThrSerArgProMetArgAlaAspIleLysGlyGlyArgLeu-624  
  
641-GluGlyThrGlyAla-645  
  
647-HisArgIleArgThr-651  
657-LeuAspGlyLysProPhelysLeuAspLeuAspAlaSerGlyGlyIleAsnArgGluLeuThrArgTrpLys  
GlySerIle-683  
696-LeuGlnAsnArgMetThrLeu-702  
  
729-SerTrpAspArgLysThrGlyIleSerAlaLysGlyGlyAlaArgGly-744  
  
764-LeuAsnGlyAspTrp-768  
774-HisAsnAlaArgGly-778  
782-IleSerArgGlnSerGlyAspAlaValLeu-791  
  
803-SerLeuLysThrArgPheGlnAsnAspArgIleGly-814  
817-LeuAspGlyGlyAlaArgPheGlyArgIleAsnAla-828  
844-ProLeuGlyGlyArgIleThr-850  
  
880-IleGlyGlyArgValGlySerProSerVal-889  
893-ValAsnGlySerSerAsnTyrGlyLysIleAsnGly-904  
908-ValGlyGlnSerArgSerPheAspThrAlaProLeuGlyGlyArg-922  
928-AlaAspAlaGluAlaPhe-933  
941-GlnThrVallysGlySerLeu-947  
956-SerIleAlaAspProHisLeuGlyGly-964  
  
966-IleAsnGlyAspLysLeuTyrTyrArgAsnGlnThr-977  
982-LeuAspAsnGlySerLeuArg-988  
991-IleAlaGlyArgLysTrpVal-997  
1001-LeuLysPheArgHisGluGlyThrAlaGluLeuSerGly-1013  
  
1015-ValSerMetGluAsnSerValProAspValAspIle-1026  
1031-AspLysTyrArgIleLeuSerArgProAsnArgArgLeuThr-1044  
1047-GlyAsnThrArgLeuArgFyrSerProGlnLysGlyIle-1059  
1065-IleLysThrAspGlnGlyLeuPheGlySerGlnLysSerMetProSerValGlyAspAspVal-1086  
1091-GluValLysLysGluAlaAlaAla-1098  
1109-AspLeuAsnAspGlyIleArgPhe-1116  
1134-GlnProGlyGlyAsnValArgGlyValGly-1143  
1146-ArgValIleLysGlyArgTyrLysAlaTyrGlyGlnAspLeuAspIleThrLysGlyThr-1165  
1171-ProLeuAsnAspProAsnLeuAsnIleArgAlaGluArgArgLeuSerProValGly-1189  
1197-SerLeuAsnSerProArgIle-1203  
1207-AlaAsnGluProMetSerGluLysAspLysLeu-1217  
1225-AlaGlySerGlySerSerGlyAspAsnAlaAla-1235  
1246-GlyGlnIleAsnAspArgIleGlyLeu-1254  
  
1256-AspAspLeuGlyPheThrSerLysArgSerArgAsnAlaGlnThrGlyGluLeuAsnProAlaGlu-1277  
1283-GlyLysGlnLeuThrGlyLys-1289  
1298-IleSerSerAlaGluGlnSerVal-1305  
1321-IleGlySerArgSerSerGlyGlyGluLeu-1330  
1335-ArgPheAspArgLeuPheGlySerAspLysLysAspSerAlaGlyAsnGlyLysGlyLys-1354

**Hydrophilic Regions - Hopp-Woods**

56-PheAspGlyAspAsnTrpSerIleGluThrGluGlyAlaAspLeuLysIleSerArg-74  
 83-GluLeuMetArgArgSerLeuHis-90  
 105-ProThrProProLysGluGluArgProProGlnGlyLeu-117  
 130-AspArgPheIleThrGlyLys-136  
 141-LysThrPheAspLys-145  
 157-TyrArgTyrAspArgLysGlyHisArgLeuAspLeuLysAlaAlaAsp-172  
 200-GlyGlyPheGluGlyGluThrIle-207  
 215-GlySerLeuLysAspValArgAla-222  
  
 244-GluSerLeuAspLysThrLeuGlu-251  
  
 292-GlySerLeuAspLeuGluAsnThrLys-300  
 302-GlyPheAlaAspArgAsnGlyIlePro-310  
 320-IleArgGlnAspGly-324  
 343-LeuSerGlyLysIleAspThrGluLysAspIleLeu-354  
 364-GlyAlaGluAspValLeu-369  
 373-PheLysGlyArgLeuAspGly-379  
 400-ThrAlaArgThrAspGly-405  
 411-SerAspProAlaAsnGluGlnArgLysLeuVal-421  
 429-AlaGlyGluGlySerLeu-434  
 442-LeuPhelysAspArgLeuLysLeuAspIleArgSerArgAlaPheAspProSerArgIleAspPro-464  
  
 480-GluLeuAlaLysGluLysPheThrGly-488  
 508-IleValTyrGluSerArgHisLeuPro-516  
  
 522-LeuArgLeuGlyArgAsnIleValLysThrAspGlyGlyPheGlyLysGlyAspArgLeuAsn-543  
 570-GlyAspLeuAspGlyGlyIleArgThrPheGluThrAspLeuSerGlyThrAla-587  
 594-LysAlaAlaAspIleArgSer-600  
 607-GlySerProGlyThrSerArgProMetArgAlaAspIleLysGlyGlyArg-623  
 647-HisArgIleArgThr-651  
 657-LeuAspGlyLysProPheLysLeuAspLeuAspAla-668  
  
 670-GlyGlyIleAsnArgGluLeuThrArgTrpLysGly-681  
 729-SerTrpAspArgLysThrGlyIleSerAlaLysGlyAlaArg-743  
 783-SerArgGlnSerGly-787  
 806-ThrArgPheGlnAsnAspArgIle-813  
 819-GlyGlyAlaArgPheGlyArgIleAsnAla-828  
 928-AlaAspAlaGluIlePhe-933  
 1001-LeuLysPheArgHisGluGlyThrAlaGluLeu-1011  
  
 1019-AsnSerValProAspValAspIle-1026  
 1031-AspLysTyrArgIleLeuSerArgProAsnArgArgLeuThr-1044  
 1049-ThrArgLeuArgTyrSerPro-1055  
  
 1065-IleLysThrAspGln-1069  
 1075-GlnLysSerSerMet-1079  
  
 1091-GluValLysLysGluAlaAlaAla-1098  
 1109-AspLeuAsnAspGlyIleArg-1115  
 1146-ArgValIleLysGlyArgTyrLysAlaTyrGlyGlnAspLeuAspIleThrLys-1163  
 1179-IleArgAlaGluArgArgLeuSer-1186  
 1209-GluProMetSerGluLysAspLysLeu-1217  
 1225-AlaGlySerGlySerSerGlyAspAsnAlaAla-1235

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1248-IleAsnAspArgIleGlyLeu-1254

1259-GlyPheThrSerLysArgSerArgAsnAlaGlnThrGlyGluLeuAsnPro-1275

1300-SerAlaGluGlnSerVal-1305

1321-IleGlySerArgSerSerGlyGly-1328

1340-PheGlySerAspLysAspSerAlaGlyAsnGlyLysGlyLys-1354

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**AMPHI Regions - AMPHI**

69-GluIleLysAspMetVal-74

102-ProAspAsnValLysThr-107

145-ValAlaIleLeuGlyAsp-150

157-LeuAlaGluTyrTyrArgAsnAlaLeuGluAsnTrpGlnGlnProValGlySer-174

199-LeuAlaLysLeuGlyAsn-204

238-ThrGlnArgTyrProGluGlnThrValSerGlyLeuAlaArgPheGlnProGlyThr-256

326-AspTyrTyrAsnLeuPheAsnLys-333

354-IleSerGlnProArg-358

375-ThrThrGlnAsnLeu-379

428-ThrAlaSerTrpLysArgGlnLeuLeu-436

455-ThrLeuGlyThrPheLeu-460

513-GlyAlaSerSerVal-517

555-LeuSerGlyAlaValPheHisAspMetGlyAspAlaAlaAlaAsn-569

584-ArgTrpPheSerProLeu-589

**Antigenic Index - Jameson-Wolf**

1-MetHisAspThrArgThrMetMet-8

30-AlaAspLeuSerGluAsnLysAla-37

43-PheLeuSerSerProAspThrGluSerValLysLeuLysProLysPheProVal-61

63-IleAspThrGlnAspSerGluIleLysAspMetValGluGluHisLeu-78

83-GlnGlnGlnGluGluValLeuAspLysGluGlnThr-94

97-LeuAlaGluGluAlaProAspAsnValLysThrMetLeuArgSerLysGlyTyrPheSerSerLysValSerL  
euThrGluLysAspGlyAla-127

133-ThrProGlyProArgThrLysIle-140

151-IleLeuSerAspGlyAsnLeuAlaGluTyrTyrArgAsnAlaLeuGluAsnTrpGln-169

172-ValGlySerAspPheAspGlnAspSerTrpGluAsnSerLysThrSerVal-188

192-ValThrArgLysTyrPro-198

201-LysLeuGlyAsnThrArgAlaAlaValAsnProAspThrAlaThrAla-216

223-AspSerGlyArgProIleAla-229

234-GluIleThrGlyThrGlnArgTyrProGluGlnThrVal-246

252-PheGlnProGlyThrProTyrAspLeu-260

270-LeuGluGlnAsnGlyHisTyrSerGly-278

283-AlaAspPheAspArgLeuGlnGlyAspArgValProVal-295

298-SerValThrGluValLysArgHisLysLeuGluThrGlyIleArgLeuAspSerGluTyrGlyLeuGlyGly  
-321

342-AspMetAspLysTyrGluThr-348

355-SerGlnProArgAsnTyrArgGlyAsnTyrTrp-365

368-AsnValSerTyrAsnArgSerThrThrGlnAsnLeuGluLysArgAlaPheSerGlyGly-387

391-ValArgAspArgAlaGlyIleAspAlaArgLeuGly-402

405-PheLeuAlaGluGlyArgLysIleProGlySerAspValAspLeuGlyAsnSerHis-423

430-SerTrpLysArgGlnLeu-435

441-HisProGluAsnGlyHisTyrLeuAspGlyLysIle-452

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468-ThrSerAlaArgAlaGly-473  
 476-PheThrProGluAsnLysLysLeu-483  
 496-ValAlaArgAspAsnAlaAspValProSer-505  
 509-PheArgSerGlyGlyAlaSerSerValArgGlyTyrGluLeuAspSer-524  
 534-ValLeuProGluArgAlaLeu-540  
 562-AspMetGlyAspAla-566

568-AlaAsnPheLysArgMetLysLeuLysHisGlySerGlyLeu-581  
 598-TyrGlyHisSerAspLysLysIleArg-606

**Hydrophilic Regions - Hopp-Woods**

1-MetHisAspThrArgThrMetMet-8  
 30-AlaAspLeuSerGluAsnLysAla-37  
 44-LysSerLysSerProAspThrGluSerValLysLeuLysProLysPheProVal-61

63-IleAspThrGlnAspSerGluIleLysAspMetValGluGluHisLeu-78  
 84-GlnGlnGluGluValLeuAspLysGluGlnThr-94  
 97-LeuAlaGluGluAlaProAspAsnValLysThrMetLeuArgSer-111

119-ValSerLeuThrGluLysAspGlyAla-127  
 134-ProGlyArgArgThrLysIle-140  
 174-SerAspPheAspGlnAspSerTrpGluAsnSerLysThr-186  
 192-ValThrArgLysGlyTyrPro-198  
 206-ArgAlaAlaValAsnProAspThrAlaThr-215  
 239-GlnArgTyrProGlu-243

283-AlaAspPheAspArgLeuGlnGlyAspArgValProVal-295  
 298-SerValThrGluValLysArgHisLysLeuGluThrGlyIleArgLeuAspSerGluTyr-317

342-AspMetAspLysTyrGluThr-348  
 373-ArgSerThrThrGlnAsnLeuGluLysArgAlaPhe-384  
 392-ArgAspArgAlaGlyIleAspAlaArgLeuGly-402  
 405-PheLeuAlaGluGlyArgLysIleProGlySerAspValAspLeu-419  
 478-ProGluAsnLysLeu-483  
 496-ValAlaArgAspAsnAlaAspVal-503  
 518-ArgGlyTyrGluLeuAspSer-524  
 534-ValLeuProGluArgAlaLeu-540  
 562-AspMetGlyAspAla-566

568-AlaAsnPheLysArgMetLysLeuLysHis-577

600-HisSerAspLysLysIleArg-606  
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**AMPHI Regions - AMPHI**

32-AspThrProSerLysPro-37  
 111-MetProGlnAsnAlaAlaGluSerAlaAsnGlnThrGly-123  
 195-LeuSerAspGluLysIleLysArgTyrLysLys-206  
 351-LysSerValAspGlyIleIleAspSer-359  
 378-GlyPheLysGlyThrTrpThr-384  
 391-ValSerGlyArgPheTyr-396

**Antigenic Index - Jameson-Wolf**

18-CysGlyGlyGlyGlyGlySerProAspValLysSerAlaAspThrProSerLysProAla-38  
 50-ValLeuProLysGluLysLysAspGluAlaAlaGlyGlyAlaProGlnAlaAspThrGlnAspAlaThrA  
 laGlyGlucGlySerGlnAsp-80

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85-SerAlaGluAsnThrGlyAsnGlyGlyAlaAlaThrThrAspAsnProLysAsnGluAspAlaGlyAlaGlnA  
snAspMetProGlnAsnAlaAlaGluSerAlaAsnGlnThrGlyAsnAsnGlnProAlaGlySerSerAspSerAl  
aProAlaSerAsnProAlaProAlaAsnGlyGlySerAspPheGlyArgThrAsnValGly-154  
160-AspGlyProSerGlnAsn-165  
169-ThrHisCysLysGlyAspSerCysAsnGlyAspAsnLeuLeuAspGluGluAlaProSerLysSerGluPhe  
GluLysLeuSerAspGluGluLysIleLysArgTyrLysLysAspGluGlnArgGluAsnPhe-213  
217-ValAlaAspArgVallysAspGlyThrAsnLys-228  
233-TyrThrAspLysProProThrArgSerAlaArgSerArgArgSerLeuPro-249  
262-ThrLeuIleValaspGlyGluAla-269  
281-AlaProGluGlyAsnTyrArgTyrLeu-289  
292-GlyAlaGluLysIleuProGlyGlySerTyr-301  
305-ValGlnGlyGluProAlaLysGlyGluMet-314  
329-HisMetGluAsnGlyArgProTyrProSerGlyGlyArgPheAlaAla-344  
346-ValaspPheGlySerLysSerValAspGlyIleAspSerGlyAspAspLeuHisMetGlyThrGlnLys  
PheLysAlaAlaIleAspGlyAsnGlyPheLysGlyThrTrpThrGluAsnGlyGlyAspValSerGly-393  
395-PheTyrGlyProAlaGlyGluGluValAlaGlyLysTyrSerTyrArgProThrAspAlaGluLysGlyGly  
Phe-419  
423-AlaGlyLysLysAspArgAsp-429

**Hydrophilic Regions - Hopp-Woods**

22-GlyGlyGlySerProAspValLysSerAlaAspThrProSerLysProAla-38  
50-ValLeuProLysGluLysAspGluAlaAlaGly-62  
65-ProGlnAlaAspThrGlnAspAlaThrAlaGlyGluGlySerGlnAsp-80  
85-SerAlaGluAsnThrGly-90  
95-AlaThrThrAspAsnProLysAsnGluAspAlaGlyAlaGlnAsnAspMetProGlnAsnAlaAlaGluSerA  
laAsnGln-121  
126-GlnProAlaGlySerSerAspSerAlaPro-135  
144-GlyGlySerAspPheGlyArg-150  
171-CysLysGlyAspSerCysAsnGly-178  
180-AsnLeuLeuAspGluGluAlaProSerLysSerGluPheGluLysLeuSerAspGluGluLysIleLysArg  
TyrLysLysAspGluGlnArgGluAsnPhe-213  
217-ValAlaAspArgVallysAspGlyThrAsn-227  
235-AspLysProProThrArgSerAlaArgSerArgArgSerLeuPro-249  
263-LeuIleValaspGlyGluAla-269  
292-GlyAlaGluLysLeuPro-297  
305-ValGlnGlyGluProAlaLysGlyGluMet-314  
331-GluAsnGlyArgProTyrProSer-338  
346-ValaspPheGlySerLysSerValAspGlyIleIleAspSerGlyAspAspLeuHis-364  
368-GlnLysPheLysAlaAlaIleAsp-375  
387-GlyGlyGlyAspValSerGly-393  
399-AlaGlyGluValAlaGly-405  
407-TyrSerTyrArgProThrAspAlaGluLysGlyGly-418  
423-AlaGlyLysLysAspArgAsp-429  
g288

**AMPHI Regions - AMPHI**

7-ValSerArgValLeu-11  
54-IleValThrLysCysAla-59  
61-ArgProTyrArgThrPheSerProLeuProVal-71  
97-HisSerThrLeuArg-101  
150-ThrLeuPheGlnAlaGlyPheAsp-157

**Antigenic Index - Jameson-Wolf**

2-HisThrGlyGlnAla-6  
28-AsnLeuProGluArgSerAlaGlySer-36  
58-CysAlaValArgProTyrArgThrPheSerPro-68

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72-LeuProLysGlnProSerAla-78  
 89-LeuProArgProAlaValAsnArgHisSerThrLeuArgSerProAspPheProProArgMet-109  
 113-IleArgGlyAspCysLeuPro-119  
 126-IleIleThrArgAsnAlaLysMetProSerGluThrValGlnValSerAspGlyIleGlnProLys-147  
 155-GlyPheAspGluIleVal-160

**Hydrophilic Regions - Hopp-Woods**  
 28-AsnLeuProGluArgSerAla-34  
 58-CysAlaValArgPro-62  
 98-SerThrLeuArgSerProAspPheProPro-107  
 113-IleArgGlyAspCys-117  
 126-IleIleThrArgAsnAlaLysMetProSerGluThrValGlnVal-140  
 155-GlyPheAspGluAlaVal-160  
**g292-2**

**AMPHI Regions - AMPHI**  
 7-LysIleLeuThrProPheThrValLeuProLeu-17  
 40-GlyLysSerValAla-44  
 62-ValLeuSerValSerGlu-67  
 69-ProValLysGlyIleTyrGlu-75  
 110-GluArgAlaAlaAspLeu-115  
 124-ProLeuAspLysAlaIleLysGluValArgGly-134  
 150-PheCysLysArgLeuGluHisGluPheGluLysMetThrAspValThr-165  
 195-LysAlaTrpThrAspTrpMetArg-202  
 212-IleCysAspAsnProVal-217

**Antigenic Index - Jameson-Wolf**  
 1-MetLysThrLysLeu-5  
 23-ThrProValSerAsnAlaAsnAlaGluSerAlaValLysAlaGluSerAlaGlyLysSerVal-43  
 47-LeuLysAlaArgLeuGluLysThrTyrSerAlaGlnAspLeuLys-61  
 66-SerGluThrProValGlyIle-73  
 85-TyrThrAspAlaGluGlyTyr-92  
 99-IleAsnIleAspThrArgLysAsnLeuThrGluGluArgAlaAlaAspLeuAsnLys-117  
 124-ProLeuAspLysAlaIleLysGluValArgGlyAsnGlyLysLeuLysVal-140  
 142-ValPheSerAspProAspCysProPhe-150  
 152-LysArgLeuGluHisGluPheGluLysMetThrAsp-163  
 177-HisProAspAlaAlaArgLysAla-184  
 189-CysGlnProAspArgAlaLysAla-196  
 200-TrpMetArgLysGlyLysPheProVal-208  
 210-GlySerIleCysAspAsnProValAlaGluThrThrSerLeuGlyGlu-225  
 238-ProAsnGlyArgThrGlnSerGlyTyrSerPro-248  
 250-ProGlnLeuGluGluIleIleArgLysAsnGlnGln-261

**Hydrophilic Regions - Hopp-Woods**  
 1-MetLysThrLysLeu-5  
 28-AlaAsnAlaGluSerAlaValLysAlaGluSerAlaGlyLysSerVal-43  
 47-LeuLysAlaArgLeuGluLysThrTyrSer-56  
 99-IleAsnIleAspThrArgLysAsnLeuThrGluGluArgAlaAlaAspLeuAsnLys-117  
 124-ProLeuAspLysAlaIleLysGluValArgGlyAsnGlyLysLeuLys-139  
 144-SerAspProAspCysProPhe-150  
 152-LysArgLeuGluHisGluPheGluLysMetThrAsp-163  
 179-AspAlaAlaArgLysAla-184  
 190-GlnProAspArgAlaLysAla-196  
 200-TrpMetArgLysGlyLysPhe-206  
 240-GlyArgThrGlnSer-244  
 250-ProGlnLeuGluGluIleIleArgLysAsnGlnGln-261

**g294-2****AMPHI Regions - AMPHI**

27-ArgPheProAlaAlaLeuArgArgTyrSer-36  
 45-LysProAlaGlyThr-49  
 51-TrpHisArgValArgArgPheLysSerAsnArgArgArgThrArgGlyValLysProLeu-69  
 85-AlaTrpThrAlaLeuSerHisAsnIleAlaGluArgAlaArgGluSerProArgArgCysGlyLysArgTyrA  
 laAspIleGlyGly-113  
 134-ValAlaHisIleIleHisLeuTyrCys-142  
 165-ValSerArgGluIlaArgArgGluVal-173  
 176-AlaMetSerTyrArg-180  
 212-PheAlaThrSerPheGly-217  
 227-AlaPheSerValLeuAlaHisPhe-234  
 247-ThrValGlyTrpSerLysTyrIleHisAlaVal-257

**Antigenic Index - Jameson-Wolf**

20-AlaValArgThrSerSerAsnArgPhe-28  
 30-AlaAlaLeuArgArgTyrSerAlaPheArg-39  
 44-ProLysProAlaGlyThrProTrpHisArgValArgArgPheLysSerAsnArgArgArgThrArgGlyValLysP  
 roLeuLysLysProTyrLeu-74  
 76-ArgGlyAlaGluCysArgCysArgArgAla-85  
 93-IleAlaGluArgAlaArgGluSerProArgArgCysGlyLysArgTyrAlaAspIleGlyGlyAspSerAspT  
 hrIleArgIleArgValPheArgLeuGluHisArgMet-129  
 161-HisThrGlyArgValSerArgGluAlaArgArgGluValGluLysAlaMetSer-178  
 240-LysMetAlaArgSer-244

**Hydrophilic Regions - Hopp-Woods**

20-AlaValArgThrSerSerAsnArg-27  
 30-AlaAlaLeuArgArg-34  
 52-HisArgValArgArgPheLysSerAsnArgArgArgThrArgGlyValLysProLeuLysLys-71  
 76-ArgGlyAlaGluCysArgCysArgArgAla-85  
 93-IleAlaGluArgAlaArgGluSerProArgArgCysGlyLysArgTyrAlaAspIleGlyGlyAspSerAspT  
 hrIleArg-119  
 121-ArgValPheArgLeuGluHisArgMet-129  
 164-ArgValSerArgGluAlaArgArgGluValGluLysAlaMetSer-178

**g295****AMPHI Regions - AMPHI**

79-PheArgGlnProArg-83  
 111-ValGlnArgPhePheArgGlnPro-118  
 131-AlaPheLeuHisGlnIle-136  
 163-ValIleArgLysIleAlaAlaLeu-170  
 176-AsnLeuArgGlyPhePro-181  
 189-HisGlnGlnArgArgIleGlyLysThr-197  
 263-TyrIleIleLysProLeuGluHis-270

**Antigenic Index - Jameson-Wolf**

4-MetAlaArgHisAspGlyGlnGlnGly-12

18-LeuProArgArgGlnGln-23

36-AlaAlaAlaHisGlyAsnArgProAlaSerAspAlaPhePheLysLeuProArgGlnArgPheHisVal-58

73-HisGlyCysArgAlaGlnPheArgGlnProArgArgIleArgLeuArgLeuArgGlnThrAlaArgGlnArgS  
 erGlyCysGlyThrAspGlnAlaAlaAsp-106  
 115-PheArgGlnProArgIleArgGlnLysGlnArgHisThrArgSerProAla-131  
 137-GlyProAspPheGly-141  
 144-GlnAsnAlaGluHisArgAla-150

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171-ArgIleGlyLysGlnAsnLeuArgGlyPheProSerArgArgGlyHisLeuArgHisGlnGlnArgArgIle  
GlyLysThrProProGlnLeuAla-202  
207-GlyGlyThrArgPheSerAspArgAsnGlyValTyrProAsnArgAlaGlyAsnGlyIleArgMetArgLeu  
AlaGlu-232  
239-ProValCysArgGlyThrSerGly-246  
253-ProTyrProTyrArgArgLysGlnProGlnTyr-263  
274-SerCysLysThrAsnAlaValArgThrValArgThrAlaPheArgGlnArgAsnGlnIleSer-294

**Hydrophilic Regions - Hopp-Woods**

5-AlaArgHisAspGlyGlnGln-11  
18-LeuProArgArgGlnGln-23  
36-AlaAlaAlaHisGlyAsnArgProAlaSer-45

77-AlaGlnPheArgGlnProArgArgIleArgLeuArgLeuArgGlnThrAlaArgGlnArgSerGlyCysGlyT  
hrAspGlnAlaAla-105  
118-ProArgIleArgGlnLysGlnArgHisThrArg-128  
146-AlaGluHisArgAla-150  
171-ArgIleGlyLysGlnAsnLeu-177  
180-PheProSerArgArgGlyHisLeuArgHisGlnGlnArgArgIleGlyLysThrProPro-199  
210-ArgPheSerAspArgAsnGly-216  
226-IleArgMetArgLeuAlaGlu-232  
239-ProValCysArgGlyThr-244  
255-ProTyrArgArgLysGlnPro-261  
281-ArgThrValArgThrAlaPheArgGlnArgAsnGlnIle-293  
g297  
**AMPHI Regions - AMPHI**  
69-GlnProGlyAspSerLeuAlaAspValLeuAla-79  
86-AspGluIleAlaArgIleThrGluLysTyr-95  
157-LeuProThrLeuArg-161  
199-LeuLysGluGlyAspAla-204  
272-LeuValTyrThrArgIleSerSer-279  
333-HisAlaAsnGlyValGluThrLeuTyrAlaHisLeuSerAlaPheSerGln-349

**Antigenic Index - Jameson-Wolf**

8-AlaLysHisArgLysTyrAla-14  
31-AlaSerThrGluGlyThrGluArgValArgProGlnArgValGluGlnLysLeuPro-49  
52-SerTrpGlyGlyAsnGly-57  
67-AlaValGlnProGlyAspSerLeuAla-75  
78-LeuAlaArgSerGlyMetAlaArgAspGluIleAlaArgIleThrGluLysTyrGlyGlyGluAlaAspLeuA  
rgHisLeuUrgAlaAspGlnSerVal-110  
115-GlyGlyAspGlySerAlaArgGlu-122  
127-ThrAspGluAspGlyGluArgAsnLeuValAlaLeuGluLysGlyGlyIleTrpArgArgSerAlaSer  
AspAlaAspMetLysVal-156  
167-ThrSerAlaArgGlySerLeuAlaArgAlaGluValProValGluIleArgGluSerLeuSer-187  
194-PheSerLeuAspGlyLeuLysGluGlyAspAlaVal-205  
228-GluValValLysGlyGlyThrThr-235  
240-TyrTyrArgSerAspLysGluGlyGlyGlyGlyAsnTyrTyrAspGluAspGlyArgValLeuGlnGlu  
LysGlyGlyPheAsn-268  
276-ArgIleSerSerProPheGlyTyr-283  
295-HisThrGlyIleAspTyrAla-301  
303-ProGlnGlyThrProValArgAlaSerAlaAspGly-314  
318-PhelysGlyArgLysGlyGlyTyrGly-326  
333-HisAlaAsnGlyValGlu-338  
350-AlaGlnGlyAsnValArgGlyGlu-358

365-SerThrGlyArgSerThrGlyProHisLeu-374  
 376-TyrGluAlaArgIleAsnGlyGlnProValAsn-386  
 393-ProThrProGluLeuThrGlnAlaAspLysAlaAla-404  
 408-GlnLysGlnLysAlaAspAlaIle-415  
 426-ValSerGlnSerAsp-430

**Hydrophilic Regions - Hopp-Woods**

8-AlaLysHisArgLysTyrAla-14  
 33-ThrGluGlyThrGluArgValArgProGlnArgValGluGlnLysLeu-48  
 68-ValGlnProGlyAspSerLeuAla-75  
 82-GlyMetAlaArgAspGluIleAlaArgIleThrGluLysTyrGlyGlyGluAlaAspLeuArgHisLeuArgA  
 laAspGln-108  
 117-AspGlySerAlaArgGlu-122  
 127-ThrAspGluAspGlyGluArgAsnLeuValAlaLeuGluLysLysGlyGlyIleTrpArgArgSerAlaSer  
 AspAlaAspMetLysVal-156  
 167-ThrSerAlaArgGlySerLeuAlaArgAlaGluValProValGluIleArgGluSerLeu-186  
 194-PheSerLeuAspGlyLeuLysGluGlyAspAlaVal-205  
 242-ArgSerAspGluAspGlyGlyGly-249  
 253-TyrTyrAspGluAspGlyArgValLeuGlnGluLysGlyGlyPhe-267  
 306-ThrProValArgAlaSerAla-312  
 319-LysGlyArgLysGlyGlyTyr-325  
 352-GlyAsnValArgGlyGlyGlu-358  
 366-ThrGlyArgSerThrGly-371  
 378-AlaArgIleAsnGly-382  
 396-GluLeuThrGlnAlaAspLysAlaAla-404  
 408-GlnLysGlnLysAlaAspAlaLeu-415  
 g298

**AMPHI Regions - AMPHI**

6-SerLeuPheAlaSerIleLeuMetSerAlaLeuIleAla-18  
 26-IleAsnAlaTyrTrpGlnGln-32  
 42-PrcLeuAlaAlaTyr-46  
 62-LeuSerAspGlyIleLysThrPhe-69  
 134-ValGlnLysSerLeuLys-139  
 148-AsnLeuSerIleGln-152  
 157-SerTyrProSerPhePheAspTrpProLysThrIleGluGluThrLeuLysLysHisProGlu-177  
 188-AsnAspProTrpAsp-192  
 208-AlaGlnGluTyrLeuLysArgValAspArgIleLeuGlu-220  
 246-MetArgTyrLeuAspLysLeuLeuSerGluHisLeu-257  
 276-ArgTyrThrAspSer-280  
 308-GluLysIleMetGluLys-313

**Antigenic Index - Jameson-Wolf**

22-SerGlnAsnProIleAsnAlaTyr-29  
 34-TyrHisArgAsnSerProLeuGluPro-42  
 47-GlyTrpTrpArgSerGlyAlaAlaLeuGlnGlu-57  
 70-LeuSerGlyGluThrProProThrAlaGlnAspGlyGlySerAlaAspMetProProGluAlaAlaAlaSerG  
 luAlaAlaProProAlaGlyGlyThrGluTrpLysGlnGlyThrGlu-109  
 111-AlaAlaAlaValArgSerGlyAspLysValPhePhe-121  
 136-LysSerLeuLysGlnGlnTyrGlyIleGluSerAlaAsnLeuSerLysGlnSerThr-154  
 162-PheAspTrpProLysThrIleGluGluThrLeuLysLysHisProGlu-177  
 186-GlyProAsnAspProTrp-191  
 194-ProValGlyLysArgTyrLeu-200  
 203-AlaSerAspGluTrpAla-208  
 211-TyrLeuLysArgValAspArgIleLeuGlu-220  
 238-LysLysValLysLeuAspGlyGlnMetArgTyrLeuAsp-250

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252-LeuLeuSerGluHisLeuLysGly-259  
 269-ThrLeuSerGlyGlyLysGlyArgTyrThrAspSerValAsnValAsnGlyLysProValArgTyrArgSer  
 LysAspGlyIle-296  
 301-GluGlyGlnLysLeuLeuAla-307  
 318-ProSerThrGlnProSerSerThrGlnPro-327

**Hydrophilic Regions - Hopp-Woods**

73-GluThrProProThrAlaGlnAspGlyGlySerAlaAspMetProProGluAlaAlaAlaSerGluAlaAlaP  
 ro-97  
 102-ThrGluTrpLysGlnGlyThrGlu-109  
 111-AlaAlaValArgSerGlyAsp-117  
 148-AsnLeuSerLysGlnSerThr-154  
 166-LysThrIleGluGluThrLeuLysLysHisProGlu-177  
 211-TyrLeuLysArgValAspArgIleLeuGlu-220  
 238-LysLysVallysLeuAspGlyGlnMetArgTyrLeuAsp-250  
 252-LeuLeuSerGluHisLeuLysGly-259  
 271-SerGlyGlyLysGlyArgTyrThrAsp-279  
 281-ValAsnValAsnGlyLysProValArgTyrArgSerLysAspGlyIle-296  
 301-GluGlyGlnLysLeuLeuAla-307  
 319-SerThrGlnProSerSerThrGlnPro-327  
**g299**

**AMPHI Regions - AMPHI**

1-MetAsnProLysHisPheIleAlaPheSerAlaLeuPheAlaAlaThrGlnAlaGluAlaLeuProValAlaSe  
 rValSerProAspThrValThrValSerProSerAlaProTyrThrAspThrAsnGlyLeuLeuThrAspTyrGly  
 AsnAlaAlaAlaSerProTrpMetLysLeuArgSerValAlaGlnGlySerGlyGluAlaPheArgIleLeuG  
 lnIleGlyAspSerHisThrAlaGlyAspPhePheThrAspAlaLeuArgLysArgLeuGlnLysThrTrpGlyAs  
 pglyGlyIleGlyTrpTyrProAlaAsnValLysGlyGlnArgMetAlaAlaValArgHisSerGlyAsnTrp  
 GlnSerPheThrSerArgAsnThrGlyAspPheProLeuGlyGlyIleLeuAlaGlnThrGlySerGlyGlyG  
 lyMetThrLeuThrAlaSerAspGlyLysThrGlyLysGlnArgValSerLeuPheAlaLysProLeuLeuAlaG  
 uGlnThrLeuThrValAsnGlyAsnThrValSerAlaAsnGlyGlyGlyTrpGlnValLeuAspThrGlyAlaAla  
 LeuProLeuAlaIleGlnThrGluMetProTrpAspIleGlyPheIleAsnIleGluAsnProAlaGlyGlyIleT  
 hrValSerAlaMetGlyIleAsnGlyIlaGlnLeuThrGlnTrpSerLysTrpArgAlaAspArgMetAsnAspLe  
 uAlaGlnThrGlyAlaAspLeuValIleLeuSerTyrGlyThrAsnGluAlaPheAsnAsnIleAspIleAla  
 AspThrGluGlnLysTrpLeuAspThrValArgGlnIleArgAspSerLeuProAlaAlaGlyIleLeuIleG  
 lyAlaProGluSerLeuLysAsnThrLeuGlyValCysGlyThrArgProValLeuLeuThrGluValGlnGlnMe  
 tGlnArgArgValAlaArgGlnGlyTrpAlaAlaLysAspGlyValHisPheSerAlaGlnGlyTyrArgArgAlaAlaG  
 luMetLeuAlaAspSerLeuGluGluLeuValArgAlaAlaAlaIleArgGln-397

**Antigenic Index - Jameson-Wolf**

1-MetAsnProLysHisPheIleAlaPheSerAlaLeuPheAlaAlaThrGlnAlaGluAlaLeuProValAlaSe  
 rValSerProAspThrValThrValSerProSerAlaProTyrThrAspThrAsnGlyLeuLeuThrAspTyrGly  
 AsnAlaAlaAlaSerProTrpMetLysLeuArgSerValAlaGlnGlySerGlyGluAlaPheArgIleLeuG  
 lnIleGlyAspSerHisThrAlaGlyAspPhePheThrAspAlaLeuArgLysArgLeuGlnLysThrTrpGlyAs  
 pglyGlyIleGlyTrpValTyrProAlaAsnValLysGlyGlnArgMetAlaAlaValArgHisSerGlyAsnTrp  
 GlnSerPheThrSerArgAsnAsnThrGlyAspPheProLeuGlyIleLeuAlaGlnThrGlySerGlyGlyG  
 lyMetThrLeuThrAlaSerAspGlyLysThrGlyLysGlnArgValSerLeuPheAlaLysProLeuLeuAlaG  
 uGlnThrLeuThrValAsnGlyAsnThrValSerAlaAsnGlyGlyGlyTrpGlnValLeuAspThrGlyAlaAla  
 LeuProLeuAlaIleGlnThrGluMetProTrpAspIleGlyPheIleAsnIleGluAsnProAlaGlyGlyIleT  
 hrValSerAlaMetGlyIleAsnGlyIlaGlnLeuThrGlnTrpSerLysTrpArgAlaAspArgMetAsnAspLe  
 uAlaGlnThrGlyAlaAspLeuValIleLeuSerTyrGlyThrAsnGluAlaPheAsnAsnIleAspIleAla  
 AspThrGluGlnLysTrpLeuAspThrValArgGlnIleArgAspSerLeuProAlaAlaGlyIleLeuIleG  
 lyAlaProGluSerLeuLysAsnThrLeuGlyValCysGlyThrArgProValLeuLeuThrGluValGlnGlnMe  
 tGlnArgArgValAlaArgGlnGlyGlnThrMetPheTrpSerTrpGlnAsnAlaMetGlyGlyIleCysSerMet

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LysAsnTrpLeuAsnGlnGlyTrpAlaAlaLysAspGlyValHisPheSerAlaGlnGlyTyrArgArgAlaAlaGluMetLeuAlaAspSerLeuGluGluLeuValArgAlaAlaAlaAlleArgGln-397

**Hydrophilic Regions - Hopp-Woods**

1-MetAsnProLysHisPheIleAlaPheSerAlaLeuPheAlaAlaThrGlnAlaGluAlaLeuProValAlaSerValSerProAspThrValThrValSerProSerAlaProTyrThrAspThrAsnGlyLeuLeuThrAspTyrGlyAsnAlaAlaAlaSerProTrpMetLysLysLeuArgSerValAlaGlnGlySerGlyGluAlaPheArgleLeuGlnIleGlyAspSerHisThrAlaGlyAspPheThrAspAlaLeuArgLysArgLeuGlnLysThrTrpGlyAspGlyGlyIleGlyTrpValTyrProAlaAsnValLysGlyGlnArgMetAlaAlaValArgHisSerGlyAsnTrpGlnSerPheThrSerArgAsnAsnThrGlyAspPheProLeuGlyGlyIleLeuAlaGlnThrGlySerGlyGlyGlyMetThrLeuThrAlaSerAspGlyGlyTrpGlyLysClnArgValSerLeuPheAlaIlysProLeuLeuAlaGluGlnThrLeuThrValAsnGlyAsnThrValSerAlaAsnGlyGlyGlyTrpGlnValLeuAspThrGlyAlaAlaLeuProLeuAlaIleGlnThrGluMetProTrpAspIleGlyPheIleAsnIleGluAsnProAlaGlyGlyIleThrValSerLeuAspAlaMetGlyIleAsnIleGlnLeuThrGlnTrpSerLysTrpArgAlaAspArgMetAsnAspLeuAlaGlnThrGlyAlaAspLeuValIleLeuSerTyrGlyThrAsnGluAlaPheAsnAsnIleAspIleAlaAspThrGluGlnLysTrpLeuAspThrValArgGlnIleArgAspSerLeuProAlaAlaGlyIleLeuIleIleGlyAlaProGlySerLeuLysAsnThrLeuGlyValCysGlyThrArgProValLeuLeuThrGluValGlnGlnMetGlnArgArgValAlaArgGlnGlyGlnThrMetPheTrpSerTrpGlnAsnAlaMetGlyGlyIleCysSerMetLysAsnTrpLeuAsnGlnGlyTrpAlaAlaLysAspGlyValHisPheSerAlaGlnGlyTyrArgArgAlaAlaGluMetLeuAlaAspSerLeuGluGluLeuValArgAlaAlaAlaAlleArgGln-397

**g302****AMPHI Regions - AMPHI**

20-SerGlyArgPheLeuArgThrValGluTrpLeuGlyAsnMetLeuProHisPro-37  
 81-ValValSerLeuAspAlaAspGlyLeuIleLysIleLeuThrHisThrValLysAsnPheThrGlyPheAlaProLeuGlyThrValLeuValSerLeu-114  
 127-SerAlaLeuMetArg-131  
 171-IlePheHisSerLeuGlyArgHisProLeuAlaGlyLeuAlaAlaPheAlaGlyValSerGly-192  
 201-GlyThrIleAspProLeuLeuAlaGlyIleThrGlnGlnAla-214  
 240-IleAlaLeuIleGly-244  
 271-ArgHisSerAsnGluIle-276  
 294-LeuSerAlaLeuLeuAlaTrp-300  
 308-IleLeuArgHisProGluThr-314  
 341-TyrGlyArgIleThrArgSerLeuArgGly-350  
 352-ArgGluValValAsnAlaMetAlaGluSerMetSer-363  
 378-PheValAlaPhePheAsnTrpThrAsnIleGlyGlnTyrIle-391  
 448-AlaProGlnValIle-452  
 455-AlaTyrArgIleGlyAspSerValThrAsnIleIleThrProMetMetSerTyrPheGlyLeuIleMetAla-478  
 505-IleAlaTrpIleAlaLeuPheCysIle-513

**Antigenic Index - Jameson-Wolf**

8-LysGluLysGlnMetSerGlnThrAspAlaArgArgSerGlyArgPheLeuArg-25  
 61-SerValProAspProArgProValGlyAlaLysGlyArgAlaAspAspGlyLeu-78  
 85-LeuAspAlaAspGlyLeu-90  
 119-IleAlaGluLysSerGly-124  
 134-LeuThrLysSerProArgLysLeuThr-142  
 152-LeuSerAsnThrAlaSerGlu-158  
 175-LeuGlyArgHisProLeu-180  
 250-LysIleValGluProGlnLeuGlyProTyrGlnSerAspLeuSerGlnGluGluLysAspIleArgHisSerAsnGluIleThrProLeuGluTyrLys-282  
 304-ProAlaAspGlyIleLeuArgHisProGluThrGlyLeu-316  
 343-ArgIleThrArgSerLeuArgGlyGluArgGluValVal-355  
 402-ValGlyLeuGlyGly-406  
 482-LysTyrLysLysAspAlaGlyVal-489

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**Hydrophilic Regions - Hopp-Woods**

8-LysGluLysGlnMetSerGlnThrAspAlaArgArgSerGlyArgPhe-23  
 63-ProAspProArgProValGlyAlaLysGlyArgAlaAspAspGlyLeu-78  
 85-LeuAspAlaAspGlyLeu-90  
 119-IleAlaGluLysSerGly-124  
 136-LysSerProArgLysLeu-141  
 263-LeuSerGlnGluGluLysAspIleArgHisSerAsnGlu-275  
 307-GlyIleLeuArgHisProGlu-313  
 344-IleThrArgSerLeuArgGlyGluArgGluValVal-355  
 482-LysTyrLysLysAspAlaGly-488  
**g305**

**AMPHI Regions - AMPHI**

10-LeuMetMetGlyLeuValGluGlyPheThrGluPheLeuPro-23  
 33-PheGlyAsnLeuIleGly-38  
 66-PheSerAsnValLeuHis-71  
 93-AlaAlaValMetGly-97  
 99-LeuPheAspLysGlnIleLysGluTyrLeuPhe-109  
 141-AspValAspAlaLeuArgProIleAspAla-150  
 155-ValAlaGlnValPheAla-160  
 202-AlaTyrAspValLeuLysHisTyrArgPhePheThrLeuHis-215  
 222-IleGlyPheIleAlaAlaPheValSer-230  
 235-ValLysAlaLeuLeuLys-240

**Antigenic Index - Jameson-Wolf**

41-SerAsnHisLysValPhe-46  
 61-GluTyrArgGlnArgPheSerAsn-68  
 72-GlyValGlyLysAspArgLysAlaAsn-80  
 128-ValGluLysArgGlnSerArgAlaGluProLysIleAlaAsp-141  
 143-AspAlaIleUArgProIleAsp-149  
 163-ProGlyThrSerArgSerGlySerThr-171  
 180-IleGluArgLysThrAlaThr-186  
 241-PheValSerLysLysAsnTyr-247

**Hydrophilic Regions - Hopp-Woods**

62-TyrArgGlnArgPhe-66  
 73-ValGlyLysAspArgLysAlaAsn-80  
 128-ValGluLysArgGlnSerArgAlaGluProLysIleAlaAsp-141  
 143-AspAlaIleUArgProIleAsp-149  
 165-ThrSerArgSerGlySer-170  
 180-IleGluArgLysThrAlaThr-186  
 242-ValSerLysLysAsn-246  
**g308-1**

**AMPHI Regions - AMPHI**

6-PheTyrArgIleLeuGlyValAlaAsp-14  
 27-ThrIleIleAlaGlyLeu-32  
 64-AlaLeuGluLeuLeuArgAlaGln-71  
 83-AlaGluMetAlaArgAlaSerGlu-90  
 101-LeuAlaAspPheValHisProIleGlyAsnIleGlyAlaCys-114  
 131-SerMetArgThrLeuAlaSerValAlaHisGlyPheGlyAsp-144  
 172-LeuAlaHisLeuAspAsnMetLysArgValThrGlu-183

**Antigenic Index - Jameson-Wolf**

39-TrpGluArgArgMetMetVal-45  
 68-LeuArgAlaGlnAspValGluThr-75  
 80-SerLysGlyAlaGluMetAlaArgAlaSerGluThrAspTyrThrLysAspGluVal-98

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118-GlyThrPheLysThrAspGlyMet-125  
 141-GlyPheGlyAspAsnLeuLeu-147  
 149-ArgAlaAlaAspValValLeuLysGluArgArgArgLeu-161  
 166-ArgGluThrProLeu-170  
 176-AspAsnMetLysArgValThrGluMetGly-185  
 195-MetTyrArgLysProGlnThrAlaAspAspIleVal-206  
 220-AspThrProAspLeuAlaGlu-226

**Hydrophilic Regions - Hopp-Woods**

39-TrpGluArgArgMetMetVal-45  
 68-LeuArgAlaGlnAspValGluThr-75  
 81-LysGlyAlaGluMetAlaArgAlaSerGluThrAspTyrThrLysAspGluVal-98  
 120-PheLysThrAspGly-124  
 149-ArgAlaAlaAspValValLeuLysGluArgArgArgLeu-161  
 176-AspAsnMetLysArgValThrGlu-183  
 195-MetTyrArgLysProGlnThrAlaAspAspIleVal-206  
 g311-1

**AMPHI Regions - AMPHI**

7-SerHisTrpArgValLeuAlaGluLeuAlaAspGlyLeuProGlnHisValSerGlnLeuAlaArg-28  
 37-LeuAsnGlyPheTrpGlnGlnMetProAlaHisIleArgGlyLeuLeuArg-53  
 55-HisAspGlyTyrTrpArgLeuValArgProLeuAlaValPheAspAlaGluGlyLeuArgAspLeuGly-77  
 124-ArgGlnGlyArgLysTrpSerHisArgLeu-133  
 155-LeuSerProValAlaAla-160  
 219-ValGluAsnAlaAlaSerValGlnSerLeuPheGln-230  
 245-GluThrLeuLeuAlaGluLeuGlyAlaValLeuGluGlnTyrAlaGluGlu-261  
 265-ProPheLeuAsnGlu-269  
 291-CysGluGlyThrVal-295  
 362-ThrValGlySerAlaProTyrArgAspLeuSerProLeu-374  
 426-TyrArgHisProGluGluHisGlySerAspArgTrpPheAsnAlaLeuGlySer-443  
 511-AlaValAlaSerGlyMetMetAspAlaValCysGly-522  
 550-AlaAlaLysValAlaGluAlaLeuProPro-559  
 576-HisGlyLeuLeuAsnLeu-581

**Antigenic Index - Jameson-Wolf**

26-LeuAlaArgGluAlaAspMetLysProGlnGln-36  
 50-GlyLeuLeuArgGlnHisAspGlyTyr-58  
 71-GluGlyLeuArgAspLeuGlyGluArgSerGlyPheGlnThr-84  
 86-LeuLysHisGluCysAlaSerSerAsnAspGluIleLeuGlu-99  
 102-ArgIleAlaProAspLysAlaHisLys-110  
 116-HisLeuGlnSerLysGlyArgGlyArgGlnGlyArgLysTrpSerHisArgLeuGlyGlu-135  
 145-PheAspArgProGlnTyrGluLeuGlySer-154  
 162-AlaCysArgArgAlaLeuGly-168  
 174-ThrGlnIleLysTrpProAsn-180  
 182-LeuValValGlyArgAspLysLeuGly-190  
 196-ThrValArgAlaGlyGlyLysThrVal-204  
 215-LeuProLysGluValGluAsn-221  
 231-ThrAlaSerArgArgGlyAsnAlaAsp-239  
 257-GlnTyrAlaGluGluGlyPhe-263  
 269-GluTyrGluThrAlaAsnArgAspHisGlyLys-279  
 283-LeuLeuArgAspGlyGluThrValCysGluGlyThrValLysGlyValAspGlyArgGlyValLeu-304  
 307-GluThrAlaGluGlyGluGlnThrValSerGlyGluIleSerLeuArgProAspAsnArgSerValSer  
 ValProLysArgProAspSerGluArgPheLeu-341  
 344-GluGlyGlyAsnSerArgLeuLys-351  
 364-GlySerAlaProTyrArgAspLeuSerProLeuGly-375  
 378-TrpAlaGluLysAlaAspGlyAsnValArgIle-388

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394-CysGlyGluSerLysLysAlaGlnValLysGluGlnLeuAlaArgLysIleGlu-411  
 424-AsnHisTyrArgHisProGluGluHisGlySerAspArgTrp-437  
 440-AlaLeuGlySerArgArgPheSerArgAsnAla-450  
 464-AlaLeuThrAspAspGlyHisTyrLeuGly-473  
 483-MetLysGluSerLeuAla-488  
 492-AlaAsnLeuAsnArgProAlaGlyLysArgTyrPro-503  
 529-GlyArgLeuLysGluLysAsnGlyAlaGlyLysProVal-541  
 547-GlyGlyGlyAlaAlaLysValAlaGlu-555  
 565-AsnThrValArgValAlaAsp-571  
 584-AlaGluGlyGlyGluSerGluHisAla-592

**Hydrophilic Regions - Hopp-Woods**

26-LeuAlaArgGluAlaAspMetLysProGlnGln-36  
 50-GlyLeuLeuArgGlnHis-55  
 71-GluGlyLeuArgAspLeuGlyGluArgSerGlyPhe-82  
 86-LeuLysHisGluCysAlaSerSerAsnAspGluIleLeuGlu-99  
 102-ArgIleAlaProAspLysAlaHisLys-110  
 118-GlnSerLysGlyArgGlyArgGlnGlyArgLysTrpSerHisArgLeuGlyGlu-135  
 162-AlaCysArgArgAlaLeu-167  
 183-ValValGlyArgAspLysLeuGly-190  
 196-ThrValArgAlaGlyGlyLys-202  
 217-LysGluValGluAsn-221  
 232-AlaSerArgArgGlyAsnAlaAsp-239  
 257-GlnTyrAlaGluGluGlyPhe-263  
 270-TyrGluThrAlaAsnArgAspHisGlyLys-279  
 285-ArgAspGlyGluThrValCys-291  
 293-GlyThrValLysGlyValAspGlyArgGly-302  
 307-GluThrAlaGluGlyGluGlnThrValVal-316  
 320-IleSerLeuArgProAspAsnArgSerValSerValProLysArgProAspSerGluArg-339  
 346-GlyAsnSerArgLeu-350  
 367-ProTyrArgAspLeuSer-372  
 378-TrpAlaGluLysAlaAspGlyAsnVal-386  
 395-GlyGluSerLysLysAlaGlnValLysGluGlnLeuAlaArgLysIleGlu-411  
 424-AsnHisTyrArgHisProGluGluHisGlySer-434  
 442-GlySerArgArgPheSerArg-448  
 464-AlaLeuThrAspAspGlyHis-470  
 483-MetLysGluSerLeuAla-488  
 493-AsnLeuAsnArgProAlaGlyLysArgTyrPro-503  
 529-GlyArgLeuLysGluLysAsnGlyAlaGlyLysProVal-541  
 549-GlyAlaAlaLysValAlaGlu-555  
 565-AsnThrValArgValAlaAsp-571  
 585-GluGlyGlyGluSerGluHisAla-592

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**AMPHI Regions - AMPHI**

6-GlyGluIleLeuGluThrValLysMetValAlaAsp-17  
 44-GlnAsnIleTyrAsnLysIleThrThrValGlyLys-55  
 82-IleAlaGlnIleAlaAlaAlaThr-89  
 96-SerValAlaGlnThrLeuAspLysAlaAlaLys-106  
 109-GlyValSerPheIleGlyGlyPheSerAlaLeuValGln-121  
 133-ArgSerValProGluAlaMetLysThr-141  
 167-GlyGluThrIleLysArgThrAlaGluIle-176  
 182-GlyCysAlaLysIleValValPheCys-190  
 230-SerAspAlaValSerLeuThrGluValAlaGluValValLysLys-244  
 249-IleThrArgValGlyGluLeuIleGlyArgGluAlaSerLys-262  
 281-ValClyAspSerValAlaArgIleLeuGluGluMetGly-293

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309-LeuAsnAspAlaVal-313  
 322-SerAlaValGlyGlyLeuSerGly-329  
 349-LeuThrLeuAspLysLeuGluAlaMetThrAla-359  
 374-ThrProAlaHisThrIleSerGlyIleIle-383  
 409-ValGlyAspSerValGluPheGlyGlyLeuLeuGly-420

**Antigenic Index - Jameson-Wolf**  
 4-GlnSerGlyGluIleLeuGlu-10  
 13-LysMetValAlaAspArgAsnPheAspVal-22  
 35-IleSerThrAspIleAspVal-41  
 52-ThrValGlyLysAspLeuValAla-59  
 64-LeuSerAlaLysTyr-68  
 89-ThrLysAlaAspSerTyrVal-95  
 100-ThrLeuAspLysAlaAlaLys-106  
 121-GlnLysGlyMetSerProSerAspGluValLeu-131  
 134-SerValProGluAlaMetLysThrThrAsp-143  
 152-GlySerThrArgAla-156  
 161-AspAlaValLysLeuAlaGlyGluThrIleLysArgThrAlaGluIleThrProGluGlyPheGly-182  
 192-AlaValGluAspAsnProPhe-198  
 204-HisGlySerGlyGluAlaAspAla-211  
 225-AlaAlaLeuGluAsnSerAspAla-232  
 237-GluValAlaGluValValLys-243  
 251-ArgValGlyGluLeuIleGlyArgGluAlaSerLys-262  
 280-AlaValGlyAspSerValAlaArgIleLeuGlu-290  
 311-AspAlaValLysLysGlyGlyMet-318  
 334-ValSerGluAspGluGlyMet-340  
 352-AspLysLeuGluAla-356  
 370-ValProGlyAspThrProAla-376  
 383-IleAlaAspGluAlaAla-388  
 392-IleAsnSerLysThrThrAla-398  
 405-ThrGlyLysThrValGlyAspSerValGlu-414  
 426-ProAlaLysGluGlySerCys-432  
 435-PheValAsnArgGlyGlyArgIle-442  
 447-GlnSerMetLysAsn-451

**Hydrophilic Regions - Hopp-Woods**  
 13-LysMetValAlaAspArgAsnPheAspVal-22  
 35-IleSerThrAspIleAspVal-41  
 52-ThrValGlyLysAspLeuValAla-59  
 89-ThrLysAlaAspSer-93  
 100-ThrLeuAspLysAlaAlaLys-106  
 123-GlyMetSerProSerAspGluValLeu-131  
 134-SerValProGluAlaMetLysThrThrAsp-143  
 161-AspAlaValLysLeuAlaGlyGluThrIleLysArgThrAlaGluIleThrPro-178  
 192-AlaValGluAspAsnPro-197  
 207-GlyGluAlaAspAla-211  
 225-AlaAlaLeuGluAsnSerAspAla-232  
 237-GluValAlaGluValValLys-243  
 251-ArgValGlyGluLeuIleGlyArgGluAlaSerLys-262  
 284-SerValAlaArgIleLeuGlu-290  
 311-AspAlaValLysLysGlyGlyMet-318  
 334-ValSerGluAspGluGlyMet-340  
 352-AspLysLeuGluAla-356  
 383-IleAlaAspGluAlaAla-388  
 408-ThrValGlyAspSerValGlu-414

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426-ProAlaLysGluGlySerCys-432

438-ArgGlyGlyArgIle-442

447-GlnSerMetLysAsn-451

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**AMPHI Regions - AMPHI**

27-GlyMetAspAspProArgThrTyrGlySerGly-37

41-AlaThrAsnValLeu-45

60-AspAlaAlaLysGly-64

66-ValAlaValLeuLeuAlaArgValLeuGlnGluPro-77

88-ValAlaLeuAlaAlaLeuValGlyHisMetTrpPro-99

143-SerLeuAlaAlaLeuValAla-149

**Antigenic Index - Jameson-Wolf**

26-TyrGlyMetAspAspProArgThrTyrGlySerGlyAsnProGlyAla-41

46-ArgSerGlyLysLysAlaAla-53

73-ValLeuGlnGluProLeuGlyLeuSerAspSerAla-84

104-PheLysGlyGlyLysGlyVal-110

180-ArgHisLysSerAsn-184

189-IleLysGlyLysGluSerLysIleGlyGluLysArg-200

**Hydrophilic Regions - Hopp-Woods**

26-TyrGlyMetAspAspProArgThrTyrGly-35

46-ArgSerGlyLysLysAlaAla-53

105-LysGlyGlyLysGlyVal-110

189-IleLysGlyLysGluSerLysIleGlyGluLysArg-200

g401

**AMPHI Regions - AMPHI**

46-ValLysProTyrAsnAlaLeu-52

65-CysTyrAsnCysHisSerGlnMetIleArgProPheArg-77

112-ValGlyGlyArgTyrSerAspGluTrpHisArgIle-123

157-MetLysAlaLeuArgLysValGlyThr-165

172-IleAlaLysAlaProGluAlaLeu-179

**Antigenic Index - Jameson-Wolf**

5-GlnLeuAlaGluGluLysIle-11

38-AlaAlaThrGlnProAlaProGlyValLysProTyrAsn-50

55-AlaGlyArgAspIleTyrIleArgGluGlyCysTyrAsnCysHis-69

74-ArgProPheArgAlaGluThrGluArgTyrGlyHis-85

90-GlyGluSerValTyr-94

98-PheGlnTrpGlySerLysArgThrGlyProAspLeuAlaArgValGlyGlyArgTyrSerAspGluTrpHis-

121

125-LeuLeuAsnProArgAspValValProGluSerAsnMetPro-138

146-AsnLysValAspValAspAla-152

158-LysAlaLeuArgLysValGlyThrProTyrSerAspGluGluIleAlaLysAlaProGlu-177

179-LeuAlaAsnLysSerGluLeuAspAla-187

**Hydrophilic Regions - Hopp-Woods**

5-GlnLeuAlaGluGluLysIle-11

76-PheArgAlaGluThrGluArgTyrGly-84

101-GlySerLysArgThrGlyProAspLeuAlaArgValGlyGlyArgTyrSerAspGluTrpHis-121

127-AsnProArgAspValValPro-133

146-AsnLysValAspValAspAla-152

158-LysAlaLeuArgLysValGly-164

167-TyrSerAspGluGluIleAlaLysAlaProGlu-177

179-LeuAlaAsnLysSerGluLeuAspAla-187

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**g402****AMPHI Regions - AMPHI**

13-IleAsnMetLeuSerPheLeuThrGly-21  
 44-GlnAlaPheSerPheIle-49  
 85-AlaGlyIleAlaAspPhe-90  
 100-ThrGlyPheSerGlyPheValHis-107  
 117-AlaValValArgGlyLeu-122  
 136-LysSerGlyArgGln-140  
 146-PheAlaAsnValAlaGly-151  
 218-ValPheGlnAsnIleAlaGlyArgProAsp-227  
 261-AspIlePheAsnSerValAsnGlyIleGlu-270  
 279-LysSerGlyIleArg-283  
 294-SerTrpAlaArgValLeuSerAlaIleProGluMetGln-306  
 344-ArgLysTrpLeuArgArgHisPro-351  
 376-AlaGluPheLeuLysGlnValGlnSerHisLeu-386  
 398-HisSerProHisAlaPheAlaThrAlaValHisSerIlePro-411  
 437-GlnArgLeuSerArgLeu-442  
 460-AlaAlaGlnLysVal-464  
 466-SerArgMetLeuIleArgMet-472

**Antigenic Index - Jameson-Wolf**

4-ValAsnThrLysProAsnThrSer-11  
 66-ArgIleCysArgSerArgPheValAsp-74  
 130-ValGlyThrAspGlyAsnLysSerGlyArgGlnValSer-142  
 223-AlaGlyArgProAspArgLeuIleGluAsnLysHisGly-235  
 240-TyrHisArgAspGlyAspLysValVal-248  
 264-AsnSerValAsnGlyIleGluArg-271  
 277-SerLeuLysSerGlyIleArgArg-284  
 321-IleAlaAspGluProGln-326  
 331-LeuGlnAspLysArgValGluIleValLeuAspAspGlyArgLysTrpLeuArgArgHisProAspGluLys  
 PheAsp-356  
 385-HisLeuThrProAspGly-390  
 429-PheProAsnLysGluLeuLeuLysGlnArgLeuSer-440  
 444-TrpProGluSerGlyArgHisValPheAspSerSerThrVal-457  
 472-MetThrGluProSerAlaGly-478  
 481-ValIleThrAspAspAsnMet-487  
 489-ValGluTyrLysTyrGlyArgGlyIle-497

**Hydrophilic Regions - Hopp-Woods**

4-ValAsnThrLysProAsn-9  
 131-GlyThrAspGlyAsnLysSerGlyArgGlnVal-141  
 223-AlaGlyArgProAspArgLeuIleGluAsnLysHis-234  
 241-HisArgAspGlyAspLysValVal-248  
 278-LeuLysSerGlyIleArg-283  
 321-IleAlaAspGluProGln-326  
 331-LeuGlnAspLysArgValGluIleValLeuAspAspGlyArgLysTrpLeuArgArgHisProAspGluLys  
 PheAsp-356  
 430-ProAsnLysGluLeuLeuLysGlnArgLeuSer-440  
 446-GluSerGlyArgHisValPhe-452  
 472-MetThrGluProSerAlaGly-478  
 481-ValIleThrAspAspAsnMet-487

**g501****AMPHI Regions - AMPHI**

63-ValGluValLeuGlnGluLeuPheArgGlnTyrArgValAlaArgGlnLeu-79  
 88-ValPheAlaAlaPheGlnAlaValPhePheGlnCysLeuAsnHisCysPheGly-105

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127-AsnAlaPheGlnGly-131  
 139-ValPheGluAlaLeuGlyAsnIleThrArgArgThrThrGluAla-153  
 183-AspGlyPheThrArgIleAsnArgCysGlyLysArgCysHisAlaPheGlyAspPheIleAsp-203  
 253-AlaPheAlaGlyGlnIle-258  
 307-TyrGlyAsnPheLeuThrValPheGlnGluPheGlyArgIleAlaAlaAlaAsp-324  
 365-GlyAsnGlnTyrValAlaGlyPhe-372  
 492-GlyGluAsnHisPheAspValPheArgThr-501  
 513-PheGluArgGlyPheGluHisIleIysPheValArgValAspArgAlaLeuTyrAspValPheAlaGlnThr-536

**Antigenic Index - Jameson-Wolf**

6-LeuThrAlaAspThrAspIle-12  
 19-GlyGlyAspGlyLysMetGlnHisHisPheAspGly-30  
 46-ValGluAlaGluGlyGln-51  
 56-ValArgAlaAspGlyGluAlaValGluVal-65  
 108-GlnSerAlaAspGluArgAsnHisAspPheAspValGlyGln-121  
 145-AsnIleThrArgArgThrThrGluAlaGlnHis-155  
 179-GlyHisThrAspAspGlyPheThrArgIleAsnArgCysGlyLysArgCysHisAla-197  
 202-IleAspValGluValAspArgGlyCysValThrGlyAspAlaAlaAspAsnPhe-219  
 231-GlnGlnGlyPheArgValAspAlaAspLeuAlaValAspAspLysPheHisThrArgGlnAlaAsp-252  
 258-IleGlyGluAlaGluCysGluPheGly-266  
 270-ValHisHisAspPheAspGlyCys-277  
 283-GlnGlyAspIleGly-287  
 295-GlyIleAspLysAlaGly-300  
 321-AlaAlaAlaAspAspGlyArgAsnThrGlnPheAlaArgAspAspGlyGlyValAla-339  
 345-ValGlyHisAspGlyGlySerThr-352  
 392-LeuThrAspGlyThr-396  
 398-PheAlaGlnAspGly-402  
 421-PheAspGlyPheGly-425  
 442-PheAspIleHisArg-446  
 453-AspGlyGlnArgVal-457  
 479-PheAspValGlyTyr-483  
 502-HisGlyLeuAlaGlnAspGlyGly-509  
 523-ValArgValAspArgAlaLeu-529  
 536-ThrValArgGlyGlyAsnLysAspAspLeuVal-546  
 552-ValGluGlyGluHisHisThr-558

**Hydrophilic Regions - Hopp-Woods**

6-LeuThrAlaAspThr-10  
 19-GlyGlyAspGlyLysMet-24  
 46-ValGluAlaGluGlyGln-51  
 56-ValArgAlaAspGlyGluAlaValGluVal-65  
 108-GlnSerAlaAspGluArgAsnHisAspPheAspVal-119  
 146-IleThrArgArgThrGluAlaGlnHis-155  
 179-GlyHisThrAspAspGlyPheThrArgIleAsnArgCysGlyLysArgCysHisAla-197  
 202-IleAspValGluValAspArgGlyCysVal-211  
 214-AspAlaAlaAspAsnPhe-219  
 234-PheArgValAspAlaAspLeuAlaValAspAspLysPheHisThrArgGlnAlaAsp-252  
 258-IleGlyGluAlaGluCysGluPheGly-266  
 270-ValHisHisAspPhe-274  
 295-GlyIleAspLysAlaGly-300  
 321-AlaAlaAlaAspAspGlyArgAsnThrGlnPheAlaArgAspAspGlyGlyVal-338  
 345-ValGlyHisAspGly-349  
 523-ValArgValAspArgAlaLeu-529  
 537-ValArgGlyGlyAsnLysAspAspLeuVal-546

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552-ValGluGlyGluHisHisThr-558

**g502-1****AMPHI Regions - AMPHI**

6-AsnLeuPheGlnPheLeuAlaValCys-14

26-GlyAlaValAspAlaLeuLysGlnPheAsnAsnAspAlaAspGlyIleSerGlySerPheThrGln-47

98-GlnValThrLysSerSerGlnAsp-105

136-GlyIleAspTyrVal-140

**Antigenic Index - Jameson-Wolf**

32-LysGlnPheAsnAsnAspAlaAspGlyIleSerGlySer-44

48-ThrValGlnSerLysLysThrGlnThrAlaHisGlyThr-61

98-GlnValThrLysSerGlnAspGlnAlaIleGlyGlySerPro-112

116-LeuSerAsnLysThrAlaLeuGluSerSerTyrThrLeuLysGluAspGlySerSerAsnGly-136

141-ArgAlaThrProLysArgAsnAsnAlaGly-150

158-PhelysGlyGlyAsn-162

167-GlnLeuLysAspSerPheGlyAsnGlnThr-176

184-AsnThrAsnProGlnLeuSerArgGlyAlaPhe-194

196-PheThrProProLysGlyValAspVal-204

**Hydrophilic Regions - Hopp-Woods**

34-PheAsnAsnAspAlaAspGlyIle-41

49-ValGlnSerLysLysLysThrGlnThr-57

100-ThrLysSerSerGlnAspGlnAlaIle-108

126-TyrThrLeuLysGluAspGlySerSerAsn-135

141-ArgAlaThrProLysArgAsnAsnAla-149

167-GlnLeuLysAspSerPheGly-173

**g503-1****AMPHI Regions - AMPHI**

6-TyrArgGluAlaLys-10

95-ThrSerSerThrSerAsnPheAlaArgAlaAlaGluMetArgSerPhe-110

**Antigenic Index - Jameson-Wolf**

4-SerLeuTyrArgGluAlaLysThr-11

32-ProAlaAsnAspAlaSerGlyArgSerSerAlaValAlaGluGluArgThrAlaThrGluMetSerAlaProSer-56

69-SerAlaSerSerCysSerGlyLysGlyValSer-79

87-LeuProThrArgAlaSerSerGluThrSerSerThrSerAsnPhe-101

103-ArgAlaAlaGluMetArgSerPheArgProLeuCysAlaArgAsnAlaArg-119

**Hydrophilic Regions - Hopp-Woods**

4-SerLeuTyrArgGluAlaLysThr-11

35-AspAlaSerGlyArgSerSerAlaValAlaGluGluArgThrAlaThrGluMetSerAla-54

73-CysSerGlyLysGlyValSer-79

89-ThrArgAlaSerSerGluThrSerSer-97

103-ArgAlaAlaGluMetArgSerPheArg-111

**g505****AMPHI Regions - AMPHI**

20-LeuThrAlaLeuLeuLysCysLeuSerLeuLeuSerLeuSerCysLeu-35

37-ThrLeuGlyAsnArg-41

89-ProAlaPhePheLysLysProGluAspIleGluThrMetPheLysAlaValHisGlyTrpGluHisValGlnGinAlaLeuAsp-116

148-AlaMetTyrLysProProLysIleLysAlaIleAspLysIleMetGlnAlaGly-165

178-IleGlnGlyValLysGlnIleIleLysAlaLeuArg-189

209-GlyValTrpAlaAspPhePheGlyLysPro-218

**Antigenic Index - Jameson-Wolf**

39-GlyAsnArgLeuGly-43  
 50-LeuLysGluAspArgAlaArgIle-57  
 64-AlaGlyLeuAsnProAspThrGlnThrVal-73  
 79-GluThrAlaLysCysGlyLeu-85  
 92-PheLysLysProGluAspIleGluThr-100  
 114-AlaLeuAspLysGlyGluGlyLeu-121  
 131-TyrAspLeuGlyGlyArgTyrIleSer-139  
 151-LysProProLysIleLysAlaIleAspLysIleMetGln-163  
 165-GlyArgValArgGlyLysGlyLysThrAlaProThrGly-177  
 179-GlnGlyValLysGlyIleIleLys-186  
 188-LeuArgAlaGlyGlu-192  
 199-AspHisValProSerProGlnGluGlyGlyGlyVal-210  
 241-CysGluArgLeuProAspGlyGlnGly-249  
 257-ValGlnGlyGluLeuAsnGlyAsnLysAlaHisAsp-268  
 273-AsnArgAsnThrGluTyrTrp-279  
 292-AsnArgTyrLysThrPro-297

**Hydrophilic Regions - Hopp-Woods**

50-LeuLysGluAspArgAlaArgIle-57  
 65-GlyLeuAsnProAspThrGlnThr-72  
 79-GluThrAlaLysCysGlyLeu-85  
 92-PheLysLysProGluAspIleGluThr-100  
 114-AlaLeuAspLysGlyGlu-119  
 151-LysProProLysIleLysAlaIleAspLysIleMetGln-163  
 165-GlyArgValArgGlyLysGlyLysThrAla-174  
 188-LeuArgAlaGlyGlu-192  
 201-ValProSerProGlnGluGly-207  
 257-ValGlnGlyGluLeuAsnGlyAsnLysAlaHisAsp-268  
 g506

**AMPHI Regions - AMPHI**

6-GluValGlyArgIleAlaHisGlyCysGlyGlyValVal-18  
 25-ArgValValHisGlnValGluGlnGlyAlaArgLeuAla-37  
 56-PheGlnArgArgPhe-60  
 99-AlaThrArgThrIleAspGlyAsp-106  
 123-GluGlnThrGlyLeuGln-128  
 138-GlyAsnGluValAlaArgCys-144  
 180-GlnValLysArgMetIleArgHisPhe-188  
 199-ValHisArgProPheArgGluLeuAlaAlaLeuAspGlyPheValGlnVal-215  
 224-GlyAspAspPheCysSerPheValGlyGlnValPheAsnProLeuLeu-240  
 249-LysThrPheAlaArgPheValPro-256  
 283-AsnLeuValGlnGlyPhe-288  
 313-PheValGlnValGlyGluPheAlaArgValAlaGlnGluGlu-326  
 372-GlyPhePheAlaAspPheAlaGluAsnPheGlyAlaGlyVal-385  
 408-PheGlyAspAspPheAlaHisGluValGlyGlu-418  
 465-CysSerPheSerGlnValGlyGlnMetGly-474

**Antigenic Index - Jameson-Wolf**

12-HisGlyCysGlyGly-16  
 31-GluGlnGlyAlaArgLeuAla-37  
 54-ValAspPheGlnArgArgPheGlyGluVal-63  
 98-ArgAlaThrArgThrIleAspGlyAspLeuAlaGlu-109  
 131-IleArgAlaArgAlaAspThrGlyAsnGluValAlaArgCysGluGly-146  
 176-ProAsnPheGlyGlnValLysArgMetIle-185  
 195-HisAspLeuAspValHisArgProPheArgGlu-205

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224-GlyAspAspPheCysSer-229  
 244-MetGluPheHisProLysThrPhe-251  
 259-ValGlyMetArgThrGluAla-265  
 279-HisHisAspGlyAsnLeu-284  
 288-PheGlyGlnGlnArgProGluValProVal-297  
 320-AlaArgValAlaGlnGluGluHisGlyArgValValAla-332  
 344-PheGlnArgLysThrAlaAspVal-351  
 362-CysHisGlyGlyGluThrGlyGlu-369  
 391-CysTyrGlyLysArgThrGluArgAlaArgThr-401  
 408-PheGlyAspAspPheAlaHisGluVal-416  
 428-GlnGlnGlyAlaAlaArgAlaGlyGlyGln-437  
 459-GlyGlySerHisArgSerCysSer-466  
 471-GlyGlnMetGlyGlyLysArgLeuThrValArgPheGlyGlyLysArgIleArgAsnArgPheLeuAspCys  
 AsnLysLeuGlu-499  
 508-LysThrMetAspAlaAlaIle-514  
 516-GlnAspPheArgTyr-520

**Hydrophilic Regions - Hopp-Woods**

31-GluGlnGlyAlaArgLeuAla-37  
 54-ValAspPheGlnArgArgPheGlyGlu-62  
 98-ArgAlaThrArgThrIleAspGlyAspLeuAlaGlu-109  
 131-IleArgAlaArgAlaAspThrGlyAsnGluValAlaArgCysGluGly-146  
 180-GlnValLysArgMetIle-185  
 195-HisAspLeuAspVal-199  
 201-ArgProPheArgGlu-205  
 244-MetGluPheHisPro-248  
 259-ValGlyMetArgThrGluAla-265  
 289-GlyGlnGlnArgProGluVal-295  
 320-AlaArgValAlaGlnGluGluHisGlyArgValValAla-332  
 344-PheGlnArgLysThrAlaAspVal-351  
 364-GlyGlyGluThrGlyGlu-369  
 393-GlyLysArgThrGluArgAlaArgThr-401  
 412-PheAlaHisGluVal-416  
 429-GlnGlyAlaAlaArgAlaGlyGly-436  
 473-MetGlyGlyLysArgLeuThr-479  
 482-PheGlyGlyLysArgIleArgAsnArgPheLeuAsp-493  
 508-LysThrMetAspAlaAlaIle-514  
 516-GlnAspPheArgTyr-520  
**g513-2**

**AMPHI Regions - AMPHI**

6-ThrGluTrpLeuHisGlyTrpValGlyAlaIleAsnAspProMetTrp-21  
 48-GlyArgSerIleLysLys-53  
 66-GlyIleThrProPheGlnAlaPheValThrGlyLeuAla-78  
 119-SerSerLeuAlaGlnLeuPheLysValArgAsp-129  
 146-GlyLeuGlyGlnLysTrpLeuGlyVal-154  
 176-IleAlaAspThrVal-180  
 205-GlyGlyIleArgArgIleSerLysAlaAla-214  
 243-ValPheGlyGlnIlePheSer-249  
 259-GlyGlyLeuLeuGlyGlyLeuIle-266  
 288-AlaProAsnAlaAlaAlaAlaAla-295  
 303-GlnGlyMetIleGlnMetLeuGlyValPheValAsp-314  
 332-ProTyrGlyAspLeu-336  
 347-ValSerGlnValGlyGlnTrp-353  
 391-ThrAlaValPheArgMet-396  
 403-TyrPheGlyAlaValAla-408

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423-IleMetAlaTrpIleAsnLeuValAlaIleLeuLeuLeuSer-436

**Antigenic Index - Jameson-Wolf**

1-MetAsnGluAsnPhe-5  
 48-GlyArgSerIleLysGluMetLeuGlyGlyArgLysGlnGlyAspAspProHisGly-66  
 126-LysValArgAspCysAspAsnHisHisPheArgGlyGlyProAla-140  
 208-ArgArgIleSerLysAlaAlaGlu-215  
 273-GlyIleLysArgGlyLeuTyrSerAsnGluAlaGlyMetGlySerAlaProAsnAla-291  
 295-AlaGluValLysHisProValSer-302  
 331-GlnProTyrGlyAspLeuSerGly-338  
 375-AlaTyrAlaGluSerAsnVal-381  
 444-ArgAspTyrThrAlaLysLeuLysMetGlyLysAspProGluPheLysLeuSerGluHisProGlyLeuLys  
 ArgArgIleLysSerAspValTrp-475

**Hydrophilic Regions - Hopp-Woods**

48-GlyArgSerIleLysGluMetLeuGlyGlyArgLysGlnGlyAspAspProHisGly-66  
 126-LysValArgAspCysAspAsnHisHis-134  
 208-ArgArgIleSerLysAlaAlaGlu-215  
 273-GlyIleLysArgGlyLeuTyr-279  
 295-AlaGluValLysHisProVal-301  
 450-LeuLysMetGlyLysAspProGluPheLysLeuSerGlu-462  
 464-ProGlyLeuLysArgArgIleLysSer-472  
**g515-1**  
**AMPHI Regions - AMPHI**  
 8-ArgAlaAlaGlyValAlaArgGlyLeuHisSerGluPheAlaArg-22  
 59-AspValArgPhePheAlaGlnValGluGluIleGlyGlnAspPhePheAlaAspAla-77  
 90-AlaGlyCysAlaAspGluValSerAspGlnPro-101  
 122-GluSerAlaGlnSerAlaAlaGlyGlyLeuThrAspGlyPheGly-137  
 176-CysGlyLysThrValGlyVal-182  
 192-LeuHisArgArgAla-196  
 233-ValAlaAspValLeuArg-238  
 251-PheGlyValAlaGlyAspValGlyGlyGlyAlaAspGlyValAlaGlnGlyLeuPheGlyGluVal-27  
 3  
 306-HisAlaAspAlaLeuSerGluArgPheAla-315  
 334-AlaAlaValGluGluPheGlySerGlyValValGluGln-347

**Antigenic Index - Jameson-Wolf**

24-ValThrAlaGluGluIleAlaPhe-31  
 38-HisGluAlaArgArgGlyGlyAsnThrPhe-47  
 51-IleAlaAlaAlaGluArgAlaGlyAsp-59  
 67-GluGluIleGlyGln-71  
 77-AlaValAspGlnGluThr-82  
 84-LeuAlaValGluArgAlaAlaGlyGluCysAlaAspGluValSerAspGlnProAlaArgAsnGlyGlyIleG  
 luGluAspGlyValAlaAlaCysArgAspAlaAlaAlaGluSerAlaGln-125  
 128-AlaGlyGlyLeuThrAspGly-135  
 160-GlyGlyAsnAspAlaAlaGlyAsn-167  
 192-LeuHisArgArgAla-196  
 217-AlaAspGlyGlyPheArg-222  
 242-GlyValGlyLysSerGlyAla-248  
 257-AspValGlyGlyAlaAspGlyVal-265  
 284-AspValAsnGlyAsnValGln-290  
 309-AlaLeuSerGluArgPheAla-315  
 318-GlyPheGlyGlyArgAlaArgCys-326  
 328-CysGlnValGluArgAlaAlaGluValGluGluPheGlySerGlyVal-344  
 347-GlnHisAsnAsnLeu-351

**Hydrophilic Regions - Hopp-Woods**

24-ValThrAlaGluGluIleAlaPhe-31  
 38-HisGluAlaArgArgGlyGlyAsn-45  
 51-IleAlaAlaAlaGluArgAlaGlyAsp-59  
 77-AlaValAspGlnGluThr-82  
 84-LeuAlaValGluArgAlaAlaGlyGluCysAlaAspGluValSerAspGlnProAlaArgAsnGlyGlyIleGluGluAspGlyValAlaAlaCysArgAspAlaAlaAlaGluSerAlaGln-125  
 162-AsnAspAlaAlaGly-166  
 192-LeuHisArgArgAla-196  
 258-ValGlyGlyGlyAlaAspGlyVal-265  
 309-AlaLeuSerGluArgPheAla-315  
 322-GlyArgAlaArgCys-326  
 328-CysGlnValGluArgAlaAlaAlaGluValGluGluPheGly-341  
 g519-1

**AMPHI Regions - AMPHI**

13-ValPheGlyPheLysSerPhe-19  
 29-ValValGluArgLeuGlyArgPheHisArgAlaLeuThrAlaGly-43  
 105-MetAlaIleThrGlnLeuAlaGlnThrThrLeuArgSerVal-118  
 139-ValSerAlaLeuAspGluAlaAla-146  
 165-GlnGluIleLeuArgAlaMetGln-172  
 192-LysIleGluGlnIle-196  
 221-SerAsnAlaGluLysIleAlaArgIleAsn-230  
 249-AlaIleArgGlnIleAlaAlaAla-256  
 273-GlnTyrValAlaAlaPheAsnAsnLeuAlaLys-283  
 292-AlaAsnValAlaAspIleGlySerLeuIleSerAlaGlyMetLysIleIleAspSerSerLysThrAla-314

**Antigenic Index - Jameson-Wolf**

31-GluArgLeuGlyArgPheHisArg-38  
 58-HisSerLeuLysGluIleProLeuAspValProSerGln-70  
 72-CysIleThrArgAspAsnThrGlnLeuThrVal-82  
 91-ThrAspProLysLeuAlaSer-97  
 122-MetGluLeuAspIleThrPheGluGluArgAspGluIleAsn-135  
 141-AlaLeuAspGluAlaAlaGly-147  
 154-LeuArgTyrGluIleLysAspLeuValPro-163  
 175-IleThrAlaGluArgGluLysArgAlaArgIleAlaGluSerGluGlyArgLysIleGluGln-195  
 197-AsnLeuAlaSerGlyGlnArgGluAlaGluIleGlnGlnSerGluGlyGluAlaGlnAla-216  
 219-AsnAlaSerAsnAlaGluLysIleAlaArgIleAsnArgAlaLysGlyGluAlaGluSerLeuArgLeu-241  
 245-AlaAsnAlaGluAlaIleArg-251  
 258-GlnThrGlnGlyGlyAlaAspAlaValAsn-267  
 281-LeuAlaLysGluSerAsnThr-287  
 303-AlaGlyMetLysIleIleAspSerSerLysThrAlaLys-315

**Hydrophilic Regions - Hopp-Woods**

31-GluArgLeuGlyArgPheHisArg-38  
 58-HisSerLeuLysGluIleProLeu-65  
 73-IleThrArgAspAsnThr-78  
 91-ThrAspProLysLeu-95  
 122-MetGluLeuAspIleThrPheGluGluArgAspGluIleAsn-135  
 141-AlaLeuAspGluAlaAla-146  
 154-LeuArgTyrGluIleLysAspLeuValPro-163  
 175-IleThrAlaGluArgGluLysArgAlaArgIleAlaGluSerGluGlyArgLysIleGluGln-195  
 200-SerGlyGlnArgGluAlaGluIleGlnGlnSerGluGlyGluAlaGlnAla-216

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221-SerAsnAlaGluLysIleAlaArgIleAsnArgAlaLysGlyGluAlaGluSerLeuArgLeu-241

245-AlaAsnAlaGluIleArg-251

281-LeuAlaLysGluSerAsn-286

306-LysIleIleAspSerSerLysThrAlaLys-315

**g520-1**

**AMPHI Regions - AMPHI**

109-AspGlyGlnIleTrpArgAlaPheSerSerLeuLys-120

**Antigenic Index - Jameson-Wolf**

20-LysProSerArgArgAlaLeu-26

47-AlaSerGlyLysIleSerLeuPro-54

84-ProProAsnAsnSerThrThrSerLeuArgAlaThrSerSerAsnGlySerLeuThrLysAlaAlaAsp-109

122-HisMetAlaGluIleArgIleSerArgProLysArgArgGluIleSerSerAlaLeuSerArgAsnThrAlaAlaAlaPro-148

150-ProThrValProLysProLysArgProMet-159

166-SerProCysLysProThrGluMet-173

**Hydrophilic Regions - Hopp-Woods**

20-LysProSerArgArgAlaLeu-26

93-ThrSerLeuArgAlaThrSerSer-100

103-SerLeuThrLysAlaAlaAsp-109

122-HisMetAlaGluIleArgIleSerArgProLysArgArgGluIleSer-137

140-LeuSerArgAsnThrAla-145

151-ThrValProLysProLysArgProMet-159

168-CysLysProThrGluMet-173

**g521**

**AMPHI Regions - AMPHI**

39-ThrLysProSerLysSerCys-45

50-LeuProProIleGly-54

86-ValLysThrValSerLysProAlaLysSer-95

126-AlaGlnLysMetLeu-130

132-GlnAlaArgLeuAlaLysGlyGlyAsn-140

146-IleAsnAlaLeuSerAsnValLeuAspArgGlnGlnAsnIle-159

**Antigenic Index - Jameson-Wolf**

1-MetLysSerLysLeu-5

36-ValTyrThrThrLysProSerLysSerCysHisSerThrAspLeuProProIleGlyAsnTyrSerSerGluArgTyrIle-62

65-GlnThrProGluProAlaProSerProSerAsnGlyGlyGln-78

80-ValLysTyrLysAlaProVal-86

88-ThrValSerLysProAlaLysSerAsnThrProProGlnGlnAlaProValAsnAsnSerArgArgSerIleLeuGluAlaGluLeuSerAsnGluArgLysAlaLeuThrGluAlaGlnLysMetLeuSer-131

134-ArgLeuAlaLysGlyGlyAsnIleAsnHisGlnLys-145

152-ValLeuAspArgGlnGlnAsn-158

162-LeuGlnArgGluLeuGlyArg-168

**Hydrophilic Regions - Hopp-Woods**

1-MetLysSerLysLeu-5

40-LysProSerLysSerCysHis-46

57-SerSerGluArgTyrIle-62

66-ThrProGluProAlaProSerProSerAsnGly-76

80-ValLysTyrLysAlaProVal-86

88-ThrValSerLysProAlaLysSerAsnThrPro-98

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105-AsnAsnSerArgArgSerIleLeuGluAlaGluLeuSerAsnGluArgLysAlaLeuThrGluAlaGlnLys  
 MetLeuSer-131  
 152-ValLeuAspArgGlnGlnAsn-158  
 162-LeuGlnArgGluLeuGlyArg-168  
**g522**  
**AMPHI Regions - AMPHI**  
 57-LysIleValGluSerCysMetLys-64  
 96-MetTrpGluGlnProLeuAspGlyLeuSerGluLysGlnIleSerSerPheGlyLysLeuGlyAlaGlnGluG  
 lnLeuAspLeuLeuGlyGlyAla-127

**Antigenic Index - Jameson-Wolf**  
 1-MetThrGluProLysHisGluThrProThrGluGluGlnValAlaAlaArgLysLysAlaLysAlaLysIleAr  
 gThr-26  
 48-AlaMetSerLysProGlnAlaLysGlnLysIleValGluSerCysMetLys-64  
 71-LysTrpGlnAsnAspLeuLysAlaArgGlyLeuAspAlaAspAsnThrArgLeu-88  
 103-GlyLeuSerGluLysGlnIleSerSerPheGlyLysLeuGlyAla-117  
 128-AsnAlaPheGluThrArgAspLysGlnCysValAlaAspLeuLysAlaAsp-144

**Hydrophilic Regions - Hopp-Woods**  
 1-MetThrGluProLysHisGluThrProThrGluGluGlnValAlaAlaArgLysLysAlaLysAlaLysIleAr  
 gThr-26  
 48-AlaMetSerLysProGlnAlaLysGlnLysIleValGluSerCysMet-63  
 72-TrpGlnAsnAspLeuLysAlaArgGlyLeuAspAlaAspAsnThrArgLeu-88  
 103-GlyLeuSerGluLysGlnIle-109  
 130-PheGluThrArgAspLysGlnCysValAlaAspLeuLysAlaAsp-144  
**g525-1**  
**AMPHI Regions - AMPHI**  
 59-GluPheAlaGluPheValAsnSerHisProGln-69  
 86-LysHisTrpMetLysAsnGly-92  
 125-ArgLeuProThrIleAspGluTrpGluPhe-134  
 154-ThrIleLeuAspTrpTyr-159  
 164-ArgLysGlyLeuHisAspValGly-171  
 178-TrpGlyValTyrAsp-182  
 188-TrpGluTrpThrGlu-192

**Antigenic Index - Jameson-Wolf**  
 24-ValGlnIleGluGlyGlySerTyrArgProLeuTyrLeuLysLysAspThrGlyLeuIleLys-44  
 46-LysProPheLysLeuAspLysTyrProValThr-56  
 67-HisProGlnTrpGlnLysGlyArgIleGlySerLysGlnAlaGlu-81  
 88-TrpMetLysAsnGlySerGlySerTyrAlaProLysAlaGlyGluLeuLysGlnPro-106  
 122-GlnGlyLysArgLeuProThrIleAspGluTrpGlu-133  
 140-AlaThrGlnLysAsnGlySerAsnGluProGlyTyrAsnArgThr-154  
 159-TyrAlaAspGlyGlyArgLysGlyLeuHisAspValGlyLysAspArgProAsnTyr-177  
 190-TrpThrGluAspPheAsnSerSerLeuLeuSerSerGlyAsnAla-204  
 213-AlaSerValGlyAlaSerAspSerSerAsnTyr-223  
 234-SerLeuGlnSerLysTyr-239  
 245-GlyPheArgCysAlaSerArg-251

**Hydrophilic Regions - Hopp-Woods**  
 35-TyrLeuLysLysAspThrGlyLeuIleLys-44  
 46-LysProPheLysLeuAspLysTyrPro-54  
 71-GlnLysGlyArgIleGlySerLysGlnAlaGlu-81  
 91-AsnGlySerArgSerTyrAla-97  
 99-LysAlaGlyGluLeuLysGln-105  
 122-GlnGlyLysArgLeuProThr-128

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140-AlaThrGlnLysAsnGlySerAsnGluProGlyTyr-151  
 162-GlyGlyArgLysGlyLeuHisAspValGlyLysAspArgProAsn-176  
 216-GlyAlaSerAspSerSerAsn-222  
**g527**  
**AMPHI Regions - AMPHI**  
 7-PhePheGlnProValGln-12  
 29-AspAlaAlaGluLeuValGluLeuAspLeuPhePro-41  
 73-GlyLysGlyIleGluArgGlnValAspAsnIleAlaAspValTyrGlyPhe-89

**Antigenic Index - Jameson-Wolf**  
 19-GlyArgSerAlaValGlyMetGlyGlySerAspAlaAlaGlu-32  
 52-GlnLysProArgLeuGlyCysArg-59  
 71-PheMetGlyLysGlyIleGluArgGlnValAspAsnIleAla-84  
 107-LeuLeuArgLysGlyThrGlyLeuGluLysThrCysArgProLysProPheValGlnProHisGlyArg-130

**Hydrophilic Regions - Hopp-Woods**  
 26-GlyGlySerAspAlaAlaGlu-32  
 53-LysProArgLeuGlyCys-58  
 71-PheMetGlyLysGlyIleGluArgGlnValAspAsnIleAla-84  
 107-LeuLeuArgLysGlyThrGlyLeuGluLysThrCysArgProLysPro-122  
**g528**  
**AMPHI Regions - AMPHI**  
 23-AргLeuAlaGlyTrpTyrGluCysSerSerLeuSerGlyTrpCysLysProArgLysProAlaAlaIle-45  
 69-AsnArgSerValArg-73  
 87-ArgLysIleGlyLysPhe-92  
 106-ProLeuValGluArgPheLys-112

**Antigenic Index - Jameson-Wolf**  
 29-GluCysSerSerLeuSerGlyTrpCysLysProArgLysProAlaAla-44  
 49-AspIleGlyGlyGluSerProLeuSerLeuGluAspTyrGluIleProLeuSerAspGlyAsnArgSerValA  
 rgAlaAsnGluTyrGluSerAlaGlnLysSerTyrPhe-85  
 88-LysIleGlyLysPheGluAlaCysGlyLeuAspTrpArgThrArgAspGlyLysProLeuValGluArgPheL  
 ysGlnGluGlyPheAspCysLeuGluLysGlnGlyLeuArgArgAsnGlyLeuSerGluArgValArgTrp-135

**Hydrophilic Regions - Hopp-Woods**  
 37-CysLysProArgLysProAlaAla-44  
 54-SerProLeuSerLeuGluAspTyrGluIleProLeu-65  
 67-AspGlyAsnArgSerValArgAlaAsnGluTyrGluSerAlaGln-81  
 88-LysIleGlyLysPheGluAlaCys-95  
 99-TrpArgThrArgAspGlyProLeuValGluArgPheLysGlnGluGlyPheAspCysLeuGluLysGlnG  
 lyLeuArgArgAsnGlyLeuSerGluArgValArgTrp-135  
**g531**

**AMPHI Regions - AMPHI**  
 64-LeuAlaAspTyrMetAla-69  
 90-GlySerIleIleGlyIlePhePheSerLeuProGlyLeuIleLeuGly-105  
 108-IleGlyAlaAlaAlaGly-113  
 132-LeuLeuGlyLeuValVal-137

**Antigenic Index - Jameson-Wolf**  
 77-ThrGlyAlaGlyLysLeuAlaVal-84  
 114-GluLeuIleAspArgArgAsnMet-121

**Hydrophilic Regions - Hopp-Woods**  
 114-GluLeuIleAspArgArgAsnMet-121

g532-2

**AMPHI Regions - AMPHI**

6-LysLysGlnAlaAsp-10  
 27-AlaLeuLeuSerAlaValThrHisLeuLeuAlaIlePheValProMetIleThr-44  
 76-TyrLeuGlnValAsnArgPheGlySerVal-85  
 122-SerThrLeuLeuGlyValSerPhe-129  
 147-LysValIleThrProThrVal-153  
 184-ThrPheGlySerMetGluAsnLeuGly-192  
 206-CysMetLysAsnPro-210  
 224-GlyTyrIleValAlaLeu-229  
 236-PheSerAlaLeuGlnAsnLeuPro-243  
 271-LeuGlyValPheGluAlaValGlyAspLeuThrAla-282  
 297-ThrLysArgLeuArgGlyGlyVal-304  
 307-AspGlyLeuValSerValIleAlaThrAlaLeuGly-318  
 338-AlaSerArgHisValGlyLysTyr-345  
 361-ArgAlaPheThrThrIleProSerProVal-370

**Antigenic Index - Jameson-Wolf**

3-GluThrMetLysGlnAlaAspSerProAspLeu-14  
 16-TyrGlyLeuGluAspArgProProPhe-24  
 80-AsnArgPheGlySer-84  
 94-XxxXxxXxxXxxSerSer-99  
 108-AlaGlyMetLysGluGlyGlyLeuSerGluGlyAla-119  
 177-PheGlyAlaLysAlaAspGlyThrPheGlySer-187  
 207-MetLysAsnProLeuLeuArg-213  
 286-ValSerAspGlnProIleGluGlyGluTyrThrLysArgLeuArgGlyGlyValLeu-305  
 394-GlyIleArgArgGluAlaVal-401  
 431-IleSerGlyGlyGly-435  
 445-LeuProGluAspLysThrGluAlaAlaValLysPheAspThrAspHisLeuGluHis-463

**Hydrophilic Regions - Hopp-Woods**

3-GluThrMetLysGlnAlaAspSerProAsp-13  
 18-LeuGluAspArgProProPhe-24  
 109-GlyMetLysGluGlyGlyLeuSer-116  
 179-AlaLysAlaAspGly-183  
 289-GlnProIleGluGlyGluTyrThrLysArgLeuArgGly-302  
 394-GlyIleArgArgGluAlaVal-401  
 445-LeuProGluAspLysThrGluAlaAlaValLysPheAspThrAspHisLeuGluHis-463

g537

**AMPHI Regions - AMPHI**

38-GlnIleArgAspGlyGlyAspAlaLeuHisTyrLeuAsnArgIle-52  
 86-HisGlyGluHisHis-90  
 109-GlyTyrLeuTyrAsnGlyValHisGlu-117  
 138-ArgGlnValAspAlaIleLeuMetSerAlaIleTyr-148  
 180-AsnGlySerPheGluArg-185  
 190-GlyArgArgGlnProGluAlaGlyArgLysTyrTyrArgAsnAlaCys-205  
 281-ArgProValArgValLeuThrAlaGly-289  
 315-TyrThrAlaValPheAspTyrValArgAsnGly-325  
 374-ThrArgTyrThrTyr-378

**Antigenic Index - Jameson-Wolf**

21-ThrGlnAsnGlnSerLeuProAlaGly-29  
 32-ValTyrProSerAlaProGlnIleArgAspGlyGlyAspAla-45  
 69-AsnSerAlaArgArgHisAlaArg-76

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80-LeuAsnProGluAspGlyHisGlyGluHisHisProAspAsnProHis-95  
 99-GlnLysLeuThrGluArgThrArgLeu-107  
 115-ValHisGluAsnIleSerThrGluGluAlaAlaGluSerSerAspSerAspIleArgThrGlnGlnArg  
 GlnValAsp-141  
 152-SerLeuLeuAspArgHisThrAspGluAlaGly-162  
 165-PheValArgGluAsnGlyLysThr-172  
 178-GlnGlyAsnGlySerPheGluArgAlaCysAlaLysGlyArgArgGlnProGluAlaGlyArgLysTyrTyr  
 ArgAsnAlaCysHisAsnGly-208  
 238-TyrGlyGluArgProAspProValProGluTyrGluIleThrGlyAsnProAlaSer-256  
 258-AspPheSerGluAlaAlaGly-264  
 266-IleAlaMetLysSer-270  
 274-TyrGlnGlyLysAsnGluIleArgPro-282  
 287-ThrAlaGlyAsnAspProAsnGlyArgLeuThr-297  
 321-TyrValArgAsnGlyArgAlaGln-329  
 334-PheArgThrArgLysProAspTyrProTyr-343  
 345-GluValAsnGlyGlyGluThrLeuAlaValArgLysGlyGluLys-359  
 364-TrpArgGlyArgTrpCysLeu-370  
 380-ArgGlnPheAsnSer-385  
 389-LeuArgHisGluAlaGlyGly-395  
 402-GlyMetAlaGlySerArgIleArgLeuThrProGluAspSerProGluArgGly-419

**Hydrophilic Regions - Hopp-Woods**

37-ProGlnIleArgAspGlyGlyAsp-44  
 69-AsnSerAlaArgArgHisAlaArg-76  
 81-AsnProGluAspGlyHisGlyGluHisHisProAsp-92  
 100-LysLeuThrAspGluArgThrArgLeu-107  
 119-IleSerThrGluGluGluAlaAlaGluSerSerAspSerAspIleArgThrGlnGlnArgGlnValAsp-14  
 1  
 152-SerLeuLeuAspArgHisThrAspGluAlaGly-162  
 165-PheValArgGluAsnGlyLys-171  
 181-GlySerPheGluArgAlaCysAlaLysGlyArgArgGlnProGluAlaGlyArgLysTyrTyrArg-202  
 240-GluArgProAspProValProGluTyrGluIle-250  
 258-AspPheSerGluAlaAlaGly-264  
 266-IleAlaMetLysSer-270  
 275-GlnGlyLysAsnGluIleArgPro-282  
 289-GlyAsnAspProAsnGlyArgLeuThr-297  
 323-ArgAsnGlyArgHisAlaGln-329  
 334-PheArgThrArgLysProAsp-340  
 352-LeuAlaValArgLysGlyGluLys-359  
 389-LeuArgHisGluAla-393  
 406-SerArgIleArgLeuThrProGluAspSerProGluArgGly-419  
 g538

**AMPHI Regions - AMPHI**

41-ThrAlaLeuAlaGluAlaValGluLeuValLysAlaAlaGly-54  
 78-LysAlaAlaGluLeuSerGluAlaValAla-87  
 104-GlnGluArgAsnLeuGluLysIleLeuGlnCysArgValLeuAspArgVal-120  
 144-GlnLeuSerHisLeuAlaGlyArgLeuIleArgGlyTyrGlyHisLeuGln-160  
 187-IleAsnAlaLeuLysLysGlnLeuAla-195  
 211-GlyArgIleLysThrPheAlaLeuValGlyTyrThrAsn-223  
 230-PheAsnArgLeuThrLys-235  
 270-GlyPheValSerAspLeuProHisLysLeuIleSerAlaPheSerAlaThrLeuGlu-288  
 306-AsnSerGlyGlnGlnIleGluAspValGluAsnValLeuGlnGluIleHis-322  
 364-GluAsnThrGlyIleAspAlaLeuArgGluAlaIleAlaGluTyrCysAla-380

**Antigenic Index - Jameson-Wolf**

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1-SerGlyArgThrGlyArgAsnSerAlaThrGlnAlaGlnProGluArgVal-17  
 24-LeuAspLysAspAspThrGlySerAsnAlaAlaArg-35  
 47-ValGluLeuValLys-51  
 53-AlaGlyGlyAspSerValArgValGluThrAlaLysArgAspArgProHisThr-70  
 76-ThrGlyLysAlaAlaGluLeuSerGlu-84  
 99-GluLeuThrProThrGlnGluArgAsnLeuGluLys-110  
 128-AlaArgArgAlaArgThrGlnGluGlyArgLeuGlnVal-140  
 160-GlnSerGlnArgGlyGlyIleGlyMetLysGlyProGlyGluThrLysLeuGluThrAspArgArgLeuThr  
 Ala-184  
 188-AsnAlaLeuLysLysGlnLeuAlaAsnLeuLysLysGlnArgAlaLeuArgArgLysSerArgGluSerGly  
 ArgIleLysThr-215  
 223-AsnValGlyLysSerSerLeu-229  
 232-ArgLeuThrLysSerGlyIleTyrAla-240  
 286-ThrLeuGluGluThrValGln-292  
 302-AlaAlaAlaArgAsnSerGlyGlnGlnIleGluAspValGluAsnValLeu-318  
 332-TyrAsnLysThrAspLeuLeuProSerGluGluGlnAsnThrGlyIle-347  
 364-GluAsnThrGlyIleAspAlaLeuArgGluAlaIle-375  
 380-AlaAlaAlaProAsnThrAspGluThrGluMetPro-391

**Hydrophilic Regions - Hopp-Woods**

1-SerGlyArgThrGlyArgAsnSerAla-9  
 12-AlaGlnProGluArg-16  
 24-LeuAspLysAspAspThrGlySerAsnAlaAlaArg-35  
 47-ValGluLeuValLys-51  
 53-AlaGlyGlyAspSerValArgValGluThrAlaLysArgAspArgProHis-69  
 77-GlyLysAlaAlaGluLeuSerGlu-84  
 100-LeuThrProThrGlnGluArgAsnLeuGluLys-110  
 128-AlaArgArgAlaArgThrGlnGluGlyArgLeuGlnVal-140  
 160-GlnSerGlnArgGlyGlyIle-166  
 170-GlyProGlyGluThrLysLeuGluThrAspArgArgLeuThrAla-184  
 188-AsnAlaLeuLysLysGlnLeuAlaAsnLeuLysLysGlnArgAlaLeuArgArgLysSerArgGluSerGly  
 ArgIleLys-214  
 286-ThrLeuGluGluThrValGln-292  
 302-AlaAlaAlaArgAsnSerGlyGlnGlnIleGluAspValGluAsnValLeu-318  
 336-AspLeuLeuProSerGluGluGlnAsn-344  
 369-AspAlaLeuArgGluAlaIle-375  
 383-ProAsnThrAspGluThrGluMetPro-391  
 g538

**AMPHI Regions - AMPHI**

41-ThrAlaLeuAlaGluValGluLeuValLysAlaAlaGly-54  
 78-LysAlaAlaGluLeuSerGluAlaValAla-87  
 104-GlnGluArgAsnLeuGluLysIleLeuGlnCysArgValLeuAspArgVal-120  
 144-GlnLeuSerHisLeuAlaGlyArgLeuIleArgGlyTyrGlyHisLeuGln-160  
 187-IleAsnAlaLeuLysGlnLeuAla-195  
 211-GlyArgIleLysThrPheAlaLeuValGlyTyrThrAsn-223  
 230-PheAsnArgLeuThrLys-235  
 270-GlyPheValSerAspLeuProHisLysLeuIleSerAlaPheSerAlaThrLeuGlu-288  
 306-AsnSerGlyGlnGlnIleGluAspValGluAsnValLeuGlnGluIleHis-322  
 364-GluAsnThrGlyIleAspAlaLeuArgGluAlaIleAlaGluTyrCysAla-380

**Antigenic Index - Jameson-Wolf**

1-SerGlyArgThrGlyArgAsnSerAlaThrGlnAlaGlnProGluArgVal-17  
 24-LeuAspLysAspAspThrGlySerAsnAlaAlaArg-35  
 47-ValGluLeuValLys-51  
 53-AlaGlyGlyAspSerValArgValGluThrAlaLysArgAspArgProHisThr-70

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76-ThrGlyLysAlaAlaGluLeuSerGlu-84  
 99-GluLeuThrProThrGlnGluArgAsnLeuGluLys-110  
 128-AlaArgArgAlaArgThrGlnGluGlyArgLeuGlnVal-140  
 160-GlnSerGlnArgGlyGlyIleGlyMetLysGlyProGlyGluThrLysLeuGluThrAspArgArgLeuThr  
 Ala-184  
 188-AsnAlaLeuLysLysGlnLeuAlaAsnLeuLysLysGlnArgAlaLeuArgArgLysSerArgGluSerGly  
 ArgIleLysThr-215  
 223-AsnValGlyLysSerSerLeu-229  
 232-ArgLeuThrLysSerGlyIleTyrAla-240  
 286-ThrLeuGluGluThrValGln-292  
 302-AlaAlaAlaArgAsnSerGlyGlnGlnIleGluAspValGluAsnValLeu-318  
 332-TyrAsnLysThrAspLeuProSerGluGlnAsnThrGlyIle-347  
 364-GluAsnThrGlyIleAspAlaLeuArgGluAlaIle-375  
 380-AlaAlaAlaProAsnThrAspGluThrGluMetPro-391

**Hydrophilic Regions - Hopp-Woods**

1-SerGlyArgThrGlyArgAsnSerAla-9  
 12-AlaGlnProGluArg-16  
 24-LeuAspLysAspAspThrGlySerAsnAlaAlaArg-35  
 47-ValGluLeuValLys-51  
 53-AlaGlyAspSerValArgValGluThrAlaLysArgAspArgProHis-69  
 77-GlyLysAlaAlaGluLeuSerGlu-84  
 100-LeuThrProThrGlnGluArgAsnLeuGluLys-110  
 128-AlaArgArgAlaArgThrGlnGluGlyArgLeuGlnVal-140  
 160-GlnSerGlnArgGlyIle-166  
 170-GlyProGlyGluThrLysLeuGluThrAspArgArgLeuThrAla-184  
 188-AsnAlaAlaLysLysGlnLeuAlaAsnLeuLysLysGlnArgAlaLeuArgArgLysSerArgGluSerGly  
 ArgIleLys-214  
 286-ThrLeuGluGluThrValGln-292  
 302-AlaAlaAlaArgAsnSerGlyGlnGlnIleGluAspValGluAsnValLeu-318  
 336-AspLeuLeuProSerGluGluGlnAsn-344  
 369-AspAlaLeuArgGluAlaIle-375  
 383-ProAsnThrAspGluThrGluMetPro-391  
**g539**

**AMPHI Regions - AMPHI**

18-ArgGlnArgGluHisHisArgLeuHisHisThr-28  
 44-LeuValGlyGlyPheAspPheLeuArgValIleGlyCysGlyGly-58  
 108-AlaGlyGlyAlaGlyAsnAlaAla-115  
 123-ArgAlaIleMetGlyPhe-128  
 142-AspLeuValGluAspPheLeu-148  
 172-AspAlaLeuCysAspCysLeuThr-179  
 197-GlnValPheGlyAsnValGln-203  
 220-PheGlyAlaAlaAlaGlnTyr-226  
 328-GlyArgSerLeuThrAsnPro-334  
 354-ValSerArgValAlaLysSerTrpSerPheAla-364  
 366-MetProAspLeuValSerArgLeu-373

**Antigenic Index - Jameson-Wolf**

1-MetGluAspLeuGlnGluIleGly-8  
 15-LysValGlyArgGlnArgGlyHisHisArg-24  
 26-HisHisThrGlnSerGlyAsnGlyLysAlaAspAsp-37  
 63-ProAspPheGlnGlnAsnValGlyGluAlaAsp-73  
 77-ValProAspAspAlaAlaAla-83  
 88-IleGluValAspAlaAspAspAlaValCys-97  
 102-LeuPheAspGlnProAspAlaGlyGlyAsnAlaAlaGluHis-117

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169-GlyIleAspAspAlaLeuCys-175  
 229-MetAlaSerArgSerAlaSer-235  
 242-ThrGluMetArgThr-246  
 261-CysSerSerAspGlySerArgSer-268  
 304-ThrThrCysSerSerThrSer-310  
 313-ThrValSerSerLysValAlaGluLysAlaGluIle-324  
 326-LeuCysGlyArgSerLeuThrAsnProThrVal-336  
 348-TyrSerArgArgAlaValVal-354  
 356-ArgValAlaLysSer-360  
 369-LeuValSerArgLeuAsnArgLeuAspLeu-378

**Hydrophilic Regions - Hopp-Woods**

1-MetGluAspLeuGlnGluIleGly-8  
 15-LysValGlyArgGlnArgGluHisHisArg-24  
 31-GlyAsnGlyLysAlaAspAsp-37  
 69-ValGluAlaAsp-73  
 78-ProAspAspAlaAlaAla-83  
 88-IleGluValAspAlaAspAspAlaValCys-97  
 102-LeuPheAspGlnProAspAlaGlyGly-110  
 113-AsnAlaAlaGluHis-117  
 169-GlyIleAspAspAlaIle-174  
 230-AlaSerArgSerAla-234  
 242-ThrGluMetArgThr-246  
 263-SerAspGlySerArg-267  
 317-LysValAlaGluLysAlaGluIle-324  
 348-TyrSerArgArgAlaValVal-354  
 369-LeuValSerArgLeuAsnArgLeuAspLeu-378

**g542****AMPHI Regions - AMPHI**

6-ArgIleArgArgCysSerVal-12

**Antigenic Index - Jameson-Wolf**

1-MetProLysTrpSerArgIleArgArgCysSerVal-12  
 29-ProProSerAsnAla-33  
 37-ValArgLeuLysSerSerAspGlyIleAlaSer-47  
 56-GlySerMetProSerGluThrValSerHisLysSerAspSerSerArgAsnThrSerAlaSerArgArgAsnV  
 alSerProLysCysProPheGly-87  
 90-CysArgGlnAspAlaAlaLysProArgArgPheGlyGlyLys-103  
 107-LeuThrGlySerArg-111

**Hydrophilic Regions - Hopp-Woods**

5-SerArgIleArgArgCysSer-11  
 37-ValArgLeuLysSerSerAspGlyIleAla-46  
 58-MetProSerGluThrValSerHisLysSerAspSerSerArgAsnThrSerAlaSerArgArgAsnValSerP  
 ro-82  
 90-CysArgGlnAspAlaAlaLysProArgArgPheGlyGly-102  
**g544-2**  
**AMPHI Regions - AMPHI**  
 55-PheTrpPheProSerCysProGlyCysValSerGluMetProLysValThrLysThrAlaAsnAspTyrLys-  
 78  
 85-LeuAlaValAlaGlnProIleAspProIleGluSerValArgGlnTyrVal-101  
 116-LysAlaValGlyGlnAlaPhe-122

**Antigenic Index - Jameson-Wolf**

1-MetLysLysIleLeu-5

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22-IleProAspSerLysThrAlaPro-29  
 35-AspLeuHisGlyLysThrValSerAsnAlaAspLeuGlnGly-48  
 59-SerCysProGlyCys-63  
 66-GluMetProLysValThrLysThrAlaAsnAspTyrLysAsnLysAspPhe-82  
 90-ProIleAspProIleGluSerValArgGlnTyrValLysAspTyrGly-105  
 113-AspAlaAspLysAlaVal-118  
 133-IleGlyLysLysGlyGluIleLeu-140  
 144-ValGlyGluProAspPheGlyLysLeuTyrGlnGluIleAspThr-158

**Hydrophilic Regions - Hopp-Woods**

1-MetLysIleLeu-5  
 23-ProAspSerLysThr-27  
 66-GluMetProLysValThrLysThrAlaAsnAspTyrLysAsnLysAspPhe-82  
 92-AspProIleGluSerValArgGlnTyrValLys-102  
 113-AspAlaAspLysAlaVal-118  
 133-IleGlyLysLysGlyGluIle-139  
 g547

**AMPHI Regions - AMPHI**

7-PheAsnLysThrValAlaSerPheAlaGlnIleValGluThrPheAspVal-23  
 62-AsnArgSerPheLys-66  
 120-GluLeuLeuThrIleLeuValLys-127

**Antigenic Index - Jameson-Wolf**

3-ValAspAsnGlyPheAsnLysThrVal-11  
 35-GlnMetLysGlnArgCysGly-41  
 56-CysGlyPheGluIleProAsnArgSerPheLysGlu-67  
 76-LeuSerGluArgPheArgThrAsnAlaGluValGluMet-88  
 128-AsnLeuSerProAsnGlyLysLysArgPhe-137

**Hydrophilic Regions - Hopp-Woods**

36-MetLysGlnArgCys-40  
 60-IleProAsnArgSerPheLysGlu-67  
 76-LeuSerGluArgPheArgThrAsnAlaGluValGluMet-88  
 129-LeuSerProAsnGlyLysLysArgPhe-137  
 g548

**AMPHI Regions - AMPHI**

7-SerPheLeuValLeuAlaAlaLeuAlaAlaCysLys-22  
 31-AlaAlaSerSerSer-35  
 41-AlaGluAsnAlaAlaLysPro-47  
 89-PheThrHisCysProAspValCysProThr-98  
 103-TyrSerAspThrLeuLysGlnLeuGlyGlyGln-113  
 132-GluIleGlyLysTyrAlaLys-139

**Antigenic Index - Jameson-Wolf**

22-LysProGlnAspAsnSerAla-28  
 33-SerSerSerAlaSer-37  
 39-ProAlaAlaGluAsnAlaAlaLysProGlnThrArgGlyThrAspMetArgLysGluAspIleGlyGlyAspPheThrLeuThrAspGlyGluClyLysProPheSer-74  
 76-SerAspLeuLysGly-80  
 93-ProAspValCysPro-97  
 104-SerAspThrLeuLysGlnLeuGlyGlyGlnAlaLysAspValLys-118  
 124-IleAspProGluArgAspThrProGluIleIleGlyLysTyrAlaLysGlnPheAsnProAspPhe-145  
 150-AlaThrGlyGlyGln-154  
 169-LysIleAsnGlnLysAspAspSerGluAsnTyrLeu-180  
 189-LeuIleAspLysAsnGlyGlu-195

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200-SerProTyrGlySerGluProGluThrIleAlaAlaAspVal-213

**Hydrophilic Regions - Hopp-Woods**

22-LysProGlnAspAsnSerAla-28  
 39-ProAlaAlaGluAsnAlaAlaLysProGlnThrArgGlyThrAspMetArgLysGluAspIleGlyGly-61  
 64-ThrLeuThrAspGlyGluGlyLysPro-72  
 76-SerAspLeuLysGly-80  
 111-GlyGlyGlnAlaLysAspValLys-118  
 124-IleAspProGluArgAspThrProGluIleIle-134  
 170-IleAsnGlnLysAspAspSerGluAsnTyrLeu-180  
 191-AspLysAsnGlyGlu-195  
 203-GlySerGluProGluThrIleAlaAlaAspVal-213  
**g553**  
**AMPHI Regions - AMPHI**  
 31-LeuAlaAlaValAlaGlyPheTyrGlyPheTyrThrAspLeu-44  
 59-AsnLeuAlaAspIleValArgPheAlaAspAsp-69  
 83-GluLeuGlySerLeu-87  
 99-HisPheValValLeu-103  
 162-GlyIleSerGlyLeuGlyArgThrLeuPhe-171  
 173-LeuLeuAlaLeuAlaAlaMetGluValPheAlaPheLeu-186  
 232-HisAspIleTyrSerLeuProProPro-240

**Antigenic Index - Jameson-Wolf**

11-LeuThrLysLysLeu-15  
 45-ArgAlaLeuArgSerLysTyr-51  
 55-LeuLysGlyGluAsnLeuAlaAsp-62  
 75-ArgAlaLeuArgLeuAspLeuAspGluLeuGlySer-86  
 106-ValSerSerAspGly-110  
 115-AspProAlaSerGlyArgArgLysValLysThrGluGluIleSerArgLysPheThr-133  
 140-TrpProAsnThrArgPheGluAlaGlyGluGluLysGlnGluIleArg-155  
 163-IleSerGlyLeuGly-167  
 192-LysIleGlyArgGlyGluSer-198  
 202-IleGlyArgSerGlyCysGlyLysSerThrLeu-212  
 216-LeuSerGlyAsnLeuProProGluSerGlyLysVal-227  
 245-PheGluCysAspGlyGlnGlyArgThr-253  
 258-GlyLeuAsnLeuAsnArg-263

**Hydrophilic Regions - Hopp-Woods**

11-LeuThrLysLysLeu-15  
 45-ArgAlaLeuArgSer-49  
 55-LeuLysGlyGluAsnLeuAlaAsp-62  
 75-ArgAlaLeuArgLeuAspLeuAspGluLeuGlySer-86  
 106-ValSerSerAspGly-110  
 116-ProAlaSerGlyArgArgLysValLysThrGluGluIleSerArgLysPheThr-133  
 144-ArgPheGluAlaGlyGluGluLysGlnGluIleArg-155  
 192-LysIleGlyArgGlyGluSer-198  
 205-SerGlyCysGlyLys-209  
 220-LeuProProGluSerGlyLys-226  
 245-PheGluCysAspGlyGlnGly-251  
**g554**  
**AMPHI Regions - AMPHI**  
 35-AlaProThrLeuGlnThrProGluThrLeu-44  
 71-AlaAlaLeuThrGlnLeuMet-77  
 110-ArgMetPheValArgProGlyAspThrVal-119  
 124-LeuLeuLysGlyMetIleAla-130

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141-AlaAspArgLeuGlyAsnGlySerIleGluAsnPheValGlnGlnMetAsnLysGlu-159  
 193-GluAlaLeuMetArgAspPheProGluTyrTyrProLeuPheSer-207  
 280-ArgAlaLeuGlnAlaPheAspThrPro-288  
 296-ThrValAlaGlnIle-300  
 331-GluGlnIleLeuGluThrIleGlnProIleProAla-342

**Antigenic Index - Jameson-Wolf**

24-SerProAlaProAsnArgProThr-31  
 37-ThrLeuGlnThrProGluThr-43  
 53-LeuGlnSerArgGlnThrLeuSerAlaLysAsnThrAsnThrProValGlu-69  
 84-LysAsnMetLysSerGlyAsnIleGlnSerGluGluAsnLeuLysIleProGlu-101  
 104-TrpAlaSerGluGlySerArgMetPheValArgProGlyAspThrValSerThrAspLysLeuLeu-125  
 142-AspArgLeuGlyAsnGlySerIleGluAsnPhi-152  
 156-MetAsnLysGluAlaArgArgLeuGlyMetLysAsnThrValPheLysAsnProThrGlyLeuGlyArgGlu  
 GlyGlnValSerThrAlaLysAspLeuSerLeu-190  
 194-AlaLeuMetArgAspPheProGluTyrTyr-203  
 214-GluAsnIleGluGlnAsnAsnArgAsnIleLeu-224  
 226-TyrArgAspAsnValAsnGlyLeuLysAlaGlyHisThrGluSerGlyGlyTyr-244  
 250-TyrSerGlyAsnGlyHis-256  
 262-LeuGlySerGluSerAlaGluThrArgAlaSerAspAsnSerLysLeuLeuAsn-279  
 286-AspThrProLysIleTyrProLysGlyLysThr-296  
 302-IleSerGlyGlySerLysLysThrValArg-311  
 323-ProHisLysGluAlaLysMetAlaGluGlnIleLeu-334  
 342-AlaProValLysLysGlyGlnIleLeuGlyLysIleLysIleArgGlnAsnGlyHisThrIleAlaGluLys  
 GluIleValAla-369  
 371-GluAsnValGluLysArgSerArgTrpGlnArgLeu-382

**Hydrophilic Regions - Hopp-Woods**

26-AlaProAsnArgProThr-31  
 57-GlnThrLeuSerAlaLysAsnThrAsnThrProValGlu-69  
 85-AsnMetLysSerGlyAsnIleGlnSerGluGluAsnLeuLysIleProGlu-101  
 107-GluGlySerArgMetPheValArgProGlyAspThrValSerThrAspLysLeuLeu-125  
 156-MetAsnLysGluAlaArgArgLeuGlyMet-165  
 174-ThrGlyLeuGlyArgGluGlyGlnValSerThrAlaLysAspLeuSerLeu-190  
 214-GluAsnIleGluGlnAsnAsnArg-221  
 227-ArgAspAsnAsnValAsn-232  
 237-GlyHisThrGluSerGly-242  
 264-SerGluSerAlaGluThrArgAlaSerAspAsnSerLysLeuLeuAsn-279  
 289-LysIleTyrProLysGlyLysThr-296  
 304-GlyGlySerLysLysThrValArg-311  
 323-ProHisLysGluAlaLysMetAlaGluGlnIleLeu-334  
 343-ProValLysLysGlyGlnIle-349

353-IleLysIleArgGlnAsnGly-359  
 362-IleAlaGluLysGluIleValAla-369  
 371-GluAsnValGluLysArgSerArgTrp-379

**g556**

**AMPHI Regions - AMPHI**  
 61-IleGluArgLeuLys-65

**Antigenic Index - Jameson-Wolf**  
 1-MetAspAsnLysThrLysLeuArgLeu-9

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52-ThrSerArgArgGlnGlnArgGlnPheIleGluArgLeuLysLysPheAspIleAspProGluLysGlyArgI  
leAsnGluAlaAsnLeuArgArgMetTyrHisSerGlyGlyGlnHisGlnLysAspAla-95  
102-SerGlnLysCysSerValAspGluAlaHisAlaMetPheLysLysArgProThrArgGlnGluIleAsn-12  
4  
127-AlaAlaLysGlnSerArgGlyGlnLysArgProHisArg-139

**Hydrophilic Regions - Hopp-Woods**

1-MetAspAsnLysThrLysLeuArgLeu-9  
53-SerArgArgGlnGlnArgGlnPheIleGluArgLeuLysLysPheAspIleAspProGluLysGlyArgIleA  
snGluAlaAsnLeuArgArgMetTyr-85  
90-GlnHisGlnLysAspAla-95  
105-CysSerValAspGluAlaHisAlaMetPheLysLysArgProThrArgGlnGluIleAsn-124  
127-AlaAlaLysGlnSerArgGlyGlnLysArgProHisArg-139  
**g557**  
**AMPHI Regions - AMPHI**  
22-GlyAlaAspGlyIle-26  
55-SerGlyArgValAspAspAlaAla-62  
113-ThrValSerValArgArgIleLeuAspTyrAlaAsp-124  
142-ArgGlnAspValAlaGluGlnIle-149

**Antigenic Index - Jameson-Wolf**

20-LeuLysGlyAlaAspGlyIleSerProLeuThrTyrArgSerTrpHisIleGluGlyGlyGlnAlaLeu-  
43  
54-AlaSerGlyArgValAspAspAlaAlaGly-63  
68-LeuArgIleAspSerValSerGlnAsnLysGluThrTyrThr-81  
100-GlnValLeuLysArgGlyGluProValGlyLysProMet-112  
118-ArgIleLeuAspTyrAlaAspAsnGluIleLeuGlyLysGlnGluGluGluThrLeu-137  
141-MetArgGlnAspValAlaGluGlnIleValArg-151

**Hydrophilic Regions - Hopp-Woods**

21-LysGlyAlaAspGlyIle-26  
56-GlyArgValAspAspAlaAlaGly-63  
68-LeuArgIleAspSerValSerGlnAsnLysGluThrTyrThr-81  
100-GlnValLeuLysArgGlyGluProValGly-109  
126-GluIleLeuGlyLysGlnGluGluGluGluThrLeu-137  
141-MetArgGlnAspValAlaGluGlnIleValArg-151  
**g560**

**AMPHI Regions - AMPHI**

30-PheArgAspGlyAlaHisLysMetAlaArgValTrpValGly-43  
167-ArgMetAlaLysMetPhe-172  
192-PheLeuLysTyrProGlyGlu-198  
216-GluLeuMetGluLysCysGluHisLeuIleGlu-226

**Antigenic Index - Jameson-Wolf**

29-ProPheArgAspGlyAlaHisLysMet-37  
63-GluHisIleProAspArgProSer-70  
75-LysHisGlnSerGlyTrpGlu-81  
95-ValAlaLysArgGluLeuPhe-101  
116-IleGlyIleAspArgAsnAsnArgArgGluAlaAsnGluGlnLeuIle-131  
134-GlyLeuAlaArgLysAsnGluGlyTyr-142  
148-ProGluGlyThrArgLeuAlaProGlyLysArgGlyLysTyrLysLeuGlyGly-165  
182-AsnSerGlyGluPheTrpProLysAsnSerPheLeuLysTyrProGlyGluIle-199  
209-HisAlaSerGlySerGluAlaGluLeuMetGluLysCysGluHisLeuIle-225  
242-MetProSerGluThr-246

**Hydrophilic Regions - Hopp-Woods**

29-ProPheArgAspGlyAlaHisLysMet-37  
 64-HisIleProAspArgProSer-70  
 95-ValAlaLysArgGluLeuPhe-101  
 116-IleGlyIleAspArgAsnAsnArgGluAlaAsnGlnLeuIle-131  
 134-GlyLeuAlaArgLysAsnGlu-140  
 149-GluGlyThrArgLeuAlaProGlyLysArgGlyLysTyrLysLeuGlyGly-165  
 211-SerGlySerGluAlaGluLeuMetGluLysCysGluHisLeuIle-225  
 242-MetProSerGluThr-246

g561-2

**AMPHI Regions - AMPHI**

6-ArgPheSerAspGly-10  
 22-GlyLeuTrpValGlyLeuAlaAla-29  
 46-AlaSerValIleGluGluAlaGlyAsn-54  
 74-GlnIleAspAsnGlnIleAlaGluPheGluLysSerLeuLysArgIleSerGlnSerAsp-93  
 128-AlaTyrArgArgProThrGlnIle-135  
 188-VallleArgProLeuGlnAlaLeuArgGluGlyAlaGluArgIleGly-203  
 219-PheLysGlnValGlyArgCysPheAsnGln-228  
 237-TyrAspAspIleGluGlyGln-243  
 247-GlnThrHisAsnLeuGluLysGln-254  
 263-ArgThrThrArgAspLeuHisGlnSerTyr-272  
 276-GlnAlaAlaGluGluPheLeuAsnHisIleLeuPro-287  
 358-GlnThrLeuIleArgGlnLeuGly-365  
 391-GlnGlyLeuHisAspSerIleAlaGlnAlaLeuThr-402  
 433-GlyValGlnGluCysTyrGluAspValArgGluLeu-444  
 455-LysGluPheProGluAlaValAlaAspLeuPheAlaArgPhe-468  
 503-LeuSerAsnIleArgLysHisAlaArg-511  
 519-ThrGluLysIleGlyGluProThr-546

**Antigenic Index - Jameson-Wolf**

4-ProThrArgPheSerAspGlyIlePro-12  
 48-VallleGluGluAlaGlyAsn-54  
 66-AlaGlyGluGlySerProArgAlaGlnIleAspAsnGlnIleAlaGluPheGluLysSerLeuLysArgIleSerGlnSerAspAlaIleHis-96  
 99-IleProSerAspAsnProLeuAla-106  
 124-ProProLeuGlnAlaTyrArgArgProThrGlnIleGluLeu-137  
 152-GluAsnAlaGlyGluLysAsnThrTrpTrp-161  
 193-GlnAlaLeuArgGluGlyAlaGluArgIleGlyGlnArgHisPheAspIleProValProGluAspGlyThrProGluPheLysGlnValGlyArgCysPheAsn-227  
 235-ThrLeuTyrAspAspLeuGluGlyGlnValAlaGluGlnThrHisAsnLeuGluLysGlnAsnArgAsnLeu-258  
 263-ArgThrThrArgAspLeuHisGlnSerTyrThrProArgGlnAlaAlaGluGluPhe-281  
 291-AlaGlnSerGlyAsn-295  
 297-CysLeuGluAsnGlySerAspThrAspIle-306  
 310-ThrAlaGluHisGlyLysLysProProLeuGluLysTyrHisAspGluThrPhe-327  
 331-TyrGlnAsnGluLysLeuGly-337  
 342-GlyPheSerAspGlyThrSerLeuThrGlyAspAspArgThrLeu-356  
 370-GlyAlaLysGlnGluGluGluLysArgLeu-379  
 383-LeuGlnGluArgAsnLeu-388  
 393-LeuHisAspSerIle-397  
 414-AlaPheAlaGluAsnLysArgGluGluAlaAlaGlu-425  
 433-GlyValGlnGluCysTyrGluAspValArgGlu-443  
 449-ArgThrLysIleSerAsnLysGluPheProGluAlaVal-461  
 480-TrpGluAsnGlySer-484  
 487-ProThrGlnAspGluGlnLeu-493

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502-SerLeuSerAsnIleArgLysHisAlaArg-511  
 520-SerGluTyrGlyGlyArgPhe-526  
 530-IleGlnAspAsnGlyGlnGlyPheAspThrGluLysIleGlyGluProThrGlySerHis-549  
 555-MetGlnGluArgAlaLysArgIleArgAla-564  
 566-LeuGluIleArgSerGlnIlaGlnGlnGlyThr-576  
 581-ThrGlyAlaProLysGluSerLeuPro-589

#### **Hydrophilic Regions - Hopp-Woods**

48-ValIleGluGluAlaGlyAsn-54

68-GluGlySerProArgAlaGlnIle-75

78-GlnIleAlaGluPheGluLysSerLeuLysArgIleSerGln-91  
 128-AlaTyrArgArgProThrGln-134  
 152-GluAsnAlaGlyGluLys-157  
 193-GlnAlaLeuArgGluGlyIlaGluArgIleGlyGlnArgHisPhe-207  
 210-ProValProGluAspGlyThrProGluPheLysGlnValGly-223  
 235-ThrLeuTyrAspAspLeuGluGlyGlnValAlaGluGlnThrHisAsnLeuGluLysGlnAsnArg-256  
 264-ThrThrArgAspLeuHis-269  
 276-GlnAlaAlaGluGluPhe-281  
 300-AsnGlySerAspThrAspIle-306  
 312-GluHisGlyLysLysProProLeuGluLysTyrHisAspGluThrPhe-327  
 331-TyrGlnAsnGluLysLeuGly-337  
 347-ThrSerLeuThrGlyAspAspArgThrLeu-356  
 370-GlyAlaLysGlnGluGluGluLysArgLeu-379  
 383-LeuGlnGluArgAsnLeu-388  
 414-AlaPheAlaGluAsnLysArgGluGluAlaAlaGlu-425  
 436-GluCysTyrGluAspValArgGlu-443  
 450-ThrLysIleSerAsnLysGluPheProGluAlaVal-461  
 488-ThrGlnAspGluGlnLeu-493  
 502-SerLeuSerAsnIleArgLysHisAlaArg-511  
 532-AspAsnGlyGlnGlyPheAspThrGluLysIleGlyGluProThrGly-547  
 555-MetGlnGluArgAlaLysArgIleArgAla-564  
 566-LeuGluIleArgSerGlnIlaGln-573  
 582-GlyAlaProLysGluSerLeuPro-589  
**g562**

#### **AMPHI Regions - AMPHI**

48-TrpSerLeuValSerAlaTrpMetValValIle-58  
 84-LeuGluThrThrValMetSerAlaValArgThrLeu-95  
 97-PheThrProTyrThrThrValAlaSerThrSer-107  
 116-ThrPhePheAlaProLeuSerArgTrp-124  
 133-AsnAlaProValHisSerMetThrLysSerThrProSerSerPheHis-148  
 184-ValSerAsnLeuValArgTrpAlaLeu-192

#### **Antigenic Index - Jameson-Wolf**

9-PheAsnSerGlyLysThrLysPro-16  
 32-ProLeuArgAlaArgArgArgSerLeuTrpArg-42  
 72-AlaThrGlyGluArgGlnLeuVal-79  
 105-SerThrSerSerProProGlyAlaGluMet-114  
 139-MetThrLysSerThrProSerSerPheHisGlySerSerAla-152  
 154-LeuArgValGluLysLysGlyIleLeuSerProLeuThr-166  
 168-ArgLeuProProSerTrpAspThrSerAlaSerLysArgProCysThr-183

#### **Hydrophilic Regions - Hopp-Woods**

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11-SerGlyLysThrLysPro-16  
 33-LeuArgAlaArgArgSerLeuTrp-41  
 72-AlaThrGlyGluArgGlnLeuVal-79  
 110-ProGlyAlaGluMet-114  
 140-ThrLysSerThrPro-144  
 154-LeuUrgValgluLysLysGlyIle-161  
 176-SerAlaSerLysArgProCysThr-183  
**563g**  
**AMPHI Regions - AMPHI**  
 24-ThrLysArgGluGlyLysSerCys-31  
 115-AsnGlnTyrAlaGlnPhe-120  
 159-ValAsnGlnIleAsnSerSerHisProSerGlnLeuAsnGlyTyrIleGlu-175  
 292-AlaAlaAsnValGlnAspMetAsnAsnThrAla-302  
 332-IleGlnAsnThrGlyLysLeuLeuSerAlaGly-342  
 457-AspAsnAlaValGlnGly-462  
 495-GlnMetAsnAsnIleGlyThr-501  
 571-AlaGlnArgIleHisAsnAlaGly-578  
 594-LeuHisAsnThrAsnGlu-599  
 616-TyrGluAlaPheGlyArg-621  
 642-SerAspHisLeuArgThrProAspGlyValAlaHisGluAsnTrp-656  
 673-ThrAlaProAlaLysIle-678  
 729-GlyLysLeuHisAsnTyrTrpArg-736  
 756-GluGluIleThrArg-760  
 771-SerHistSerLysAlaLeu-776  
 809-ProAsnSerPheThrProLeuPro-816  
 861-LeuHisLysArgLeuGlyAspGlyTyr-869  
 877-GluGlnIleAlaGluLeuThrGlyHisArgArgLeuAspGlyTyrGlnAsn-893  
 899-LysAlaLeuMetAsp-903  
 1002-ThrLeuAspAsnIleGlyGly-1008  
 1019-AlaThrGlnAspIleAsnAsnIleGlyGlyIleLeu-1030  
 1051-LysSerSerGlnAsn-1055  
 1106-GlnAlaGlyArgAspIle-1111  
 1135-GlySerThrAsnGluValGlySerSer-1143  
 1191-ValAspAspAlaSerLysHisThrGlyArg-1200  
 1215-SerHisHisGluThr-1219  
 1254-GlnAlaGlyAsnHisVal-1259  
 1269-GlnSerGluThrTyrHisGln-1275  
 1326-TyrGluGlnThrGly-1330  
 1388-SerThrGlnSerSerLysGlnVal-1395  
 1416-TyrGlnThrGlyAlaGlnAsnLeuAlaAsnGlyThrThrAsn-1431  
 1508-GluGlnSerAsnThrGluArgSerGln-1516  
 1542-GlyGlyAsnValGlyLysGlyTyr-1549  
 1692-SerAspIleGlnAsnTyrSerGln-1699  
 1718-LeuGlyGlnGlyAlaLys-1723  
 1761-IleAsnThrProLysAsnIle-1767  
 1796-ThrAspThrAlaGluArgHisSerGlySerLeuLysAsn-1808  
 1825-ValSerGlnAspPheSerLysAsnValGln-1834  
 1893-IleLeuAsnMetLeuAlaSerGlyLeuAlaGluProThr-1905  
 1925-GlyGlnHisPheLysAspLeuAlaGly-1933  
 1968-ProAlaIleGlyAlaLeu-1972  
 2006-SerAlaIleThrArgMetLeuGlyThrAla-2015  
 2032-PheGlnThrAlaSerAspPheSerTyrProIleAsn-2047

**Antigenic Index - Jameson-Wolf**  
 1-MetAsnLysThrLeu-5

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9-IlePheAsnArgLysArgGlyAlaVal-17  
 22-GluThrThrLysArgGluGlyLysSerCysAlaAspSerGlySerGlySer-38  
 48-ProThrHisSerLys-52  
 78-IleIleThrAspLysAlaAlaProLysThrGlnGln-89  
 122-ValGlyAsnArgGlyAlaIleLeuAsnAsnSerArgSerAsnThrGlnThr-138  
 147-AsnProTrpLeuThrArgGlyGluAlaArgVal-157  
 162-IleAsnSerSerHisProSerGlnLeuAsnGly-172  
 174-IleGluValGlyGlyArgArgAlaGluVal-183  
 200-AsnAlaSerArgAlaThrLeu-206  
 208-ThrGlyGlnProGlnTyrGlnAlaGlyAspPheSerGlyPheLysIleArgGlnGlyAsnAla-228  
 234-GlyLeuAspAlaArgAspThrAspPhe-242  
 261-AlaGlyIleArgAsnGlnGlyGlnLeu-269  
 279-AspAlaAsnGlyArgLeuValAsn-286  
 296-GlnAspMetAsnAsnThrAlaGluHisLysValAsnIleArg-309  
 311-GlnAlaPheGluAsnSerGlyThrAlaVal-320  
 322-GlnGlnGlyThrGlnIleHis-328  
 330-GlnSerIleGlnAsnThrGlyLysLeu-338  
 340-SerAlaGlyThrGluAspLeuAlaVal-348  
 351-SerLeuAsnAsnGlnAsnGlyGluIleAlaThrAsn-362  
 366-IleIleHisAspGlyGlnSer-373  
 379-AsnThrAsnGlyThrIleGlnSerGlyArgAspValAlaIle-392  
 395-LysSerLeuSerAsnGlyThrLeuAlaAlaAspAsnLysLeuAspIleAlaLeu-413  
 415-AspAspPheTyrValGluArgLysIleValAlaGlyAsnGluLeu-429  
 431-LeuSerThrArgGlySerLeuLysAsnSerHisThr-442  
 444-GlnAlaGlyLysArgIleArgIleLysAlaAsnLeuAspAsn-458  
 463-AsnIleGlnSerGlyGlyThrThrAspIleGlyThrGlnHisAsnLeuThrAsnArgGlyLeuIleAspGly  
 GlnGlnThrLysIleGln-492  
 513-AlaThrArgLeuAspAsnGlnAspGluAsnGlyThrGly-525  
 529-AlaAlaArgGluAsnLeu-534  
 540-GlnLeuAsnAsnArgGluAsnSerLeu-548  
 559-GlyAlaLeuAspThrAsnAspGlnAlaThrGlyLysAlaGlnArgIleHisAsnAlaGlyAla-579  
 583-AlaAlaGlyLysMetArgLeuGlyValGluLysLeuHisAsnThrAsnGluHisLeuLys-602  
 607-GluThrGlyArgGluArgIleValAsp-615  
 623-GluLeuLeuArgGluGlyThrGlnHis-631  
 638-TyrAsnAsnGluSerAspHisLeuArgThrProAspGlyValAlaHis-653  
 657-HisLysTyrAspTyrGluLysValThrGlnGluThrGlnVal-670  
 680-AlaGlySerAspLeuIleIleAspSerLysAlaValPheAsnSerAspSerArgIle-698  
 707-GlnThrGluLysAspGlyLeuHisAsnGluGlnThrPheGlyGluLysLysValPheSerGluAsnGlyLys  
 LeuHisAsn-733  
 735-TrpArgAlaArgArgLysGlyHisAspGluThrGlyHisArgGluGlnAsnTyrThrLeuProGluIle  
 ThrArgAspIleSerLeu-764  
 770-GluSerHisSerLysAlaLeuSerArgHisAlaProSerGlnGlyThrGluLeuProGlnSerAsnArgAsp  
 AsnIleArgThrAlaLysSerAsnGlyIle-803  
 825-ProAlaAsnLysGlyTyrLeuValGluThrAspProArgPheAlaAsn-840  
 854-LeuLysLeuAspProAsnAsnLeuHisLysArgLeuGlyAspGlyTyrTyrGluGlnArgLeuIleAsn-87  
 6  
 883-ThrGlyHisArgArgLeuAspGlyTyrGlnAsnAspGluGluGlnPheLysAlaLeuMetAspAsnGlyAla  
 ThrAlaAlaArgSerMetAsn-913  
 922-AlaGluGlnAlaAla-926  
 938-LysGluValLysLeuProAspGlyGlyThr-947  
 959-VallysAsnGlyGlyIleAspGlyLysGly-968  
 982-GlySerLeuLysAsnSerGlyThrIleAlaGlyArgAsnAla-995  
 999-AsnThrAspThrLeuAspAsnIleGlyGly-1008  
 1010-IleHisAlaGlnLysSerAlaVal-1017  
 1040-AlaGlyAsnAsnIleAsnAsnClnSerThrAlaLysSerSerGlnAsnAlaGlnGlySer-1059

1072-ThrGlyLysGluLysGlyVal-1078  
 1083-AlaGlyLysAspIleAsnIle-1089  
 1094-IleSerAsnGlnSerAspGlnGlyGlnThrArgLeuGlnAlaGlyArgAspIleAsnLeuAspThrValG1  
 nThrGlyLysTyrGlnGluIleHisPheAspAlaAspAsnHisThrIleArgGlySerThrAsnGluValGlySer  
 SerIleGlnThrLysGlyAspVal-1150  
 1155-GlyAsnAsnLeuAsnAlaLysAlaAlaGluValGlySerAlaLysGlyThr-1171  
 1175-TyrAlaLysAsnAspIleThrIle-1182  
 1190-GlnValAspAspAlaSerLysHisThrGlyArgSerGlyGlyAsnLys-1206  
 1208-ValIleThrAspLysAlaGlnSerHisHisGluThrAlaGlnSerSerThrPheGluGlyLysGln-1229  
 1233-GlnAlaGlyAsnAspAlaAsn-1239  
 1245-ValIleSerAspAsnGlyThrArgIleGlnAla-1255  
 1262-GlyThrThrGlnThrGlnSerGlnSerGluThrTyrHisGlnThrGlnLysSerGlyLeu-1281  
 1291-GlySerLysThrAsnThrGlnGluAsnGlnSerGlnSerAsnGluHisThrGlySerThrValGlySerLe  
 uLysGlyAspThrThrIle-1320  
 1324-LysHisTyrGluGlnThrGlySerAsnValSerSerProGluGlyAsnAsnLeu-1341  
 1354-AsnGlnLeuAsnSerLysThrThrGlnThrTyrGluGlnLysGlyLeu-1369  
 1379-ArgPheGlyThrThrSerAspCysArgSerThrGlnSerSerLysGlnValGlyGlnSerLysAsnAspAr  
 gValAsnAla-1405  
 1415-AlaTyrGlnThrGlyLysGlyAlaGlnAsnLeuAlaAsnGlyThrThrAsnAlaLys-1433  
 1441-TyrGlyGluGlnGlnAsnArgGlnThrThrGln-1451  
 1460-SerGlnIleGlnAlaGlyGlyLysThr-1468  
 1470-LeuTyrCysArgCysGlyGluGlnSerAsn-1480  
 1487-GlyValSerGlyArgAlaGlyThr-1494  
 1496-LeuIleAlaAspLysGlnIle-1502  
 1506-SerAlaGluGlnSerAsnThrGluArgSerGlnAsnLysSerAlaGlyTrpAsn-1523  
 1543-GlyAsnValGlyLysGlyTyrGlyTyrGlyAspSerValThrHisArgHisSerHisIleGlyAspLysG1  
 ySerGln-1568  
 1572-GlnSerGlyGlyAspThrIleIle-1579  
 1582-AlaGlnValArgGlyLysGlyValGlnValAsnAlaLysAsn-1595  
 1600-SerValGlnAspArgGluThrTyrGlnSerLysGlnGlnAsnAlaGlyAla-1616  
 1626-AlaSerGlyAspTyrSerGlnSerLysIleArgAlaAspHis-1639  
 1641-SerValThrGluGlnSerGlyIleTyrAlaGlyGluAspGlyTyrGln-1656  
 1660-GlyAsnHisThrGlyLeuLysGlyGlyIle-1669  
 1673-SerGlnSerAlaIleAspLysGlyAsnArgPheSerThrGlyThrLeuAlaGlySerAspIleGlnAs  
 nTyrSerGlnTyrGluGlyLysSerPheGly-1706  
 1713-ValSerGlyLysThrLeuGlyGlnGlyAlaLysAsnLysProGlnAspLysHisLeu-1731  
 1734-IleAlaAspLysAsnAlaSerSer-1742  
 1745-GlyTyrGlySerAspSerAspSerGlnSerSerIleThrLysSerGlyIleAsnThrProLysAsnIleG1  
 nIleThrAspGluAlaAlaGln-1775  
 1778-LeuThrGlyLysIleAlaGlnThrLysAlaAspIleAspThrAsnValThrThrAspThrAlaGluAr  
 gHisSerGlySerLeuAsnIlePheAspLysAspArgValGlnSerGluLeuAspLeuGlnArgThrValSer  
 GlnAspPheSerLysAsnValGlnGlnThrAsnThrGluIle-1840  
 1842-GlnHisLeuAspLysLeuIleAlaAspLysGluAlaAlaGluThrAlaAla-1858  
 1863-AlaAsnGlyAspMetGluThrAlaLysArgLysAlaHisGluAlaGlnAspAlaAlaAlaLysAlaAspAs  
 nTrpGlnGln-1889  
 1899-SerGlyLeuAlaGluProThrGlnSerGly-1908  
 1915-ThrAlaSerProAspValSer-1921  
 1927-HisPheLysAspLeuAlaGlyGlnAsnAlaAsnGlyLysLeuThrAlaSerGlnGluThr-1946  
 1963-XxxGlyAsnAsnAlaPro-1968  
 1973-GlyAlaGlyGlySerGlnAlaAla-1980  
 1988-LeuTyrGlyLysGlyAspGlyGlySerLeuAsnAlaGluGluLysGluThrVal-2005  
 2017-GlyAlaAlaGluGlyAsnSerSerAlaAspAla-2027  
 2034-ThrAlaSerAspPheAlaSerSerPheSerTyr-2044

10-PheAsnArgLysArgGlyAla-16  
 22-GluThrThrLysArgGluGlyLysSerCysAlaAspSerGlySer-36  
 78-IleIleThrAspLysAlaAlaProLysThrGlnGln-89  
 131-AsnSerArgSerAsnThr-136  
 153-GlyGluAlaArgVal-157  
 176-VaIGlyGlyArgArgAlaGluVal-183  
 235-LeuAspAlaArgAspThrAspPhe-242  
 261-AlaGlyIleArgAsn-265  
 296-GlnAspMetAsnAsnThrAlaGluHisLysValAsnIle-308  
 311-GlnAlaPheGluAsnSerGly-317  
 342-GlyThrGluAspLeuAla-347  
 355-GlnAsnGlyGluIleAlaThr-361  
 385-GlnSerGlyArgAspValAlaIle-392  
 403-LeuAlaAlaAspAsnLysLeuAspIleAlaLeu-413  
 417-PheTyrValIleArgLysIleValAla-425  
 435-GlySerLeuLysAsn-439  
 444-GlnAlaGlyLysArgIleArgIleLysAlaAsnAsnLeu-456  
 468-GlyThrThrAspIleGlyThr-474  
 487-GlnGlnThrLysIleGln-492  
 514-ThrArgLeuAspAsnGlnAspGluAsnGlyThr-524  
 529-AlaAlaArgGluAsnLeu-534  
 540-GlnLeuAsnAsnArgGluAsnSer-547  
 561-LeuAspThrAsnAspGlnAlaThrGlyLysAlaGlnArgIleHis-575  
 583-AlaAlaGlyLysMetArgLeuGlyValGluLeuHisAsnThrAsnGluHisLeuLys-602  
 607-GluThrGlyArgGluArgIleValAsp-615  
 623-GluLeuLeuArgGluGlyThrGlnHis-631  
 640-AsnGluSerAspHisLeuArgThrProAspGlyValAla-652  
 659-TyrAspTyrGluLysValThrGln-666  
 684-LeuIleIleAspSerLysAla-690  
 694-SerAspSerArgIle-698  
 707-GlnThrGluLysAspGlyLeuHisAsn-715  
 717-GlnThrPheGlyGluLysLysValPheSerGluAsnGlyLys-730  
 736-ArgAlaArgArgLysGlyHisAspGluThrGlyHisArgGluGlnAsn-751  
 756-GluGluIleThrArgAspIleSer-763  
 771-SerHisSerLysAlaIleSerArgHisAlaPro-781  
 783-GlnGlyThrGluLeuProGlnSerAsnArgAspAsnIleArgThrAlaLysSerAsnGly-802  
 830-TyrLeuValThrAspProArgPheAlaAsn-840  
 854-LeuLysLeuAspPro-858  
 860-AsnLeuHisLysArgLeuGly-866  
 883-ThrGlyHisArgArgLeuAspGlyTyrGlnAsnAspGluGluGlnPheLysAlaLeuMet-902  
 905-GlyAlaThrAlaAlaArg-910  
 922-AlaGluGlnAlaAla-926  
 938-LysGluValLysLeuProAspGlyGlyThr-947  
 959-VaiLysAsnGlyGlyIleAspGlyLysGly-968  
 982-GlySerLeuLysAsn-986  
 1010-IleHisAlaGlnLysSerAlaVal-1017  
 1048-SerThrAlaLysSerSerGlnAsnAlaGlnGly-1058  
 1073-GlyLysGluLysGlyVal-1078  
 1083-AlaGlyLysAspIleAsn-1088  
 1096-AsnGlnSerAspGlnGlyGlnThrArgLeuGlnAlaGlyArgAspIleAsnLeu-1113  
 1125-HisPheAspAlaAspAsnHisThrIleArgGlySerThrAsnGluValGlySer-1142  
 1144-IleGlnThrLysGlyAspVal-1150  
 1158-LeuAsnAlaLysAlaAlaGluValGlySerAlaLysGly-1170  
 1176-AlaLysAsnAspIle-1180  
 1190-GlnValAspAlaSerLysHisThrGlyArgSerGlyGlyGly-1204

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1208-ValIleThrAspLysAlaGlnSerHisHisGluThrAlaGln-1221  
 1223-SerThrPheGluGlyLysGln-1229  
 1249-AsnGlyThrArgIleGlnAla-1255  
 1267-GlnSerGlnSerGluThr-1272  
 1276-ThrGlnLysSerGlyLeu-1281  
 1292-SerLysThrAsnThrGlnGluAsnGlnSerGlnSerAsnGluHisThrGly-1308  
 1314-LeuLysGlyAspThr-1318  
 1324-LysHisTyrGluGlnThrGly-1330  
 1334-SerSerProGluGly-1338  
 1356-LeuAsnSerLysThrThrGln-1362  
 1364-TyrGluGlnLysGly-1368  
 1384-SerAspCysArgSerThrGlnSerSerLysGlnValGlyGlnSerLysAsnAspArgValAsn-1404  
 1417-GlnThrGlyLysGlyAlaGln-1423  
 1443-GluGlnGlnAsnArgGlnThrThr-1450  
 1474-ArgCysGlyGluGlnSerAsn-1480  
 1488-ValSerGlyArgAlaGly-1493  
 1497-IleAlaAspLysGlnIle-1502  
 1506-SerAlaGluGlnSerAsnThrGluArgSerGlnAsnLys-1518  
 1560-SerHisIleGlyAspLysGlySer-1567  
 1582-AlaGlnValArgGlyLysGlyVal-1589  
 1600-SerValGlyAspArgGluThrTyrGlnSerLysGlnGlnAsn-1613  
 1628-GlyAspTyrSerGlnSerLysIleArgAlaAspHis-1639  
 1650-AlaGlyGluAspGlyTyrGln-1656  
 1674-GlnSerAlaLysAspLysGlyLysAsnArgPheSer-1685  
 1700-TyrGluGlyLysSer-1704  
 1717-ThrLeuGlyGlnGlyAlaLysAsnLysProGlnAspLysHisLeu-1731  
 1734-IleAlaAspLysAsnGlnAla-1740  
 1748-SerAspSerAspSerGlnSerSerIleThr-1757  
 1768-GlnIleThrAspGluAlaAlaGln-1775  
 1786-ThrLysAlaAspIleAspThr-1792  
 1794-ValThrThrAspThrAlaGluArgHisSerGlySerLeu-1806  
 1808-AsnIlePheAspLysAspArgValGlnSerGluLeuAspLeuGlnArgThrValSer-1826  
 1836-ThrAsnThrGluIle-1840  
 1842-GlnHisLeuAspLysLeuLysAlaAspLysGluAlaAlaGluThrAlaAla-1858  
 1865-GlyAspMetGluThrAlaLysArgLysAlaHisGluAlaGlnAspAlaAlaAlaLysAlaAspAsn-1886  
 1901-LeuAlaAlaGluProThrGln-1906  
 1927-HisPheLysAspLeuAlaGly-1933  
 1936-AlaAsnGlyLysLeuThrAlaSerGlnGluThr-1946  
 1975-GlyGlySerGluAlaAla-1980  
 1991-LysGlyAspGlyGlySerLeuAsnAlaGluGluLysGluThrVal-2005  
 2017-GlyAlaAlaGluGlyAsnSerSerAla-2025  
**g565-2**  
**AMPHI Regions - AMPHI**  
 50-AlaThrCysThrArgAlaMetSerLysSer-59  
 66-SerSerTrpAlaArg-70  
 103-AspPheMetSerGlnLeuAspLeuThr-111  
 139-CysSerAsnSerGlyGluThrIleSerSerCysProAlaMetAlaSerIleThrLysProAsn-159  
 184-AlaAsnThrThrAsnAlaPheAsnThr-192

**Antigenic Index - Jameson-Wolf**

1-MetAspSerThrLeuSerLysThrCys-9  
 23-PheAlaArgProArgProAlaAlaSerAsnThrSerLeu-35  
 37-PheAlaSerProAsnAspThrGlySer-45  
 55-AlaMetSerLysSerSerAlaLysTyrGly-64  
 67-SerTrpAlaArgThrArgProThrValcysProProLeuProLysProThrIle-84

-815-

86-ThrXxxSerAspLeu-90  
 97-MetLeuCysArgSerSerAspPheMetSer-106  
 109-AspLeuThrLysArgProThrSerAlaSerLeuProProLysArgLysGlyAlaIle-127  
 129-IleAspSerArgThrAlaAla-135  
 139-CysSerAsnSerGlyGluThrIleSer-147  
 155-IleThrLysProAsnSerProProCysAlaArgTyr-166  
 170-LeuArgLeuSerProThrGlu-176  
 194-SerIleAlaAsnSerIleAsnThrCysArgGlnProPro-206

**Hydrophilic Regions - Hopp-Woods**

24-AlaArgProArgProAlaAla-30  
 39-SerProAsnAspThrGlySer-45  
 55-AlaMetSerLysSerSerAla-61  
 69-AlaArgThrArgPro-73  
 100-ArgSerSerAspPhe-104  
 109-AspLeuThrLysArgProThrSer-116  
 119-LeuProProLysArgLysGlyAlaIle-127  
 129-IleAspSerArgThr-133  
 141-AsnSerGlyGluThrIleSer-147  
 156-ThrLysProAsnSer-160  
**g566**  
**AMPHI Regions - AMPHI**  
 52-GlyPheValGlyAspPheHisAlaPhe-60

**Antigenic Index - Jameson-Wolf**

36-ProAsnCysGlyAlaAspGlyThrGlyGlyLysGlyHisAla-49  
 61-AlaValGlyGlyGluGluGlyVal-69  
 77-AlaAspGlyGlyLysAlaAspGlyGlyArgIleAlaArg-89  
 105-AlaAlaGluArgAlaGlyAspAspPheAla-114

**Hydrophilic Regions - Hopp-Woods**

39-GlyAlaAspGlyThrGlyGlyLysGlyHisAla-49  
 63-GlyGlyGluGluGlyGlyVal-69  
 78-AspGlyGlyLysAlaAspGlyGlyArgIleAlaArg-89  
 105-AlaAlaGluArgAlaGlyAspAspPheAla-114  
**g567**

**AMPHI Regions - AMPHI**

54-GluLeuValGlnGluIleAlaArgGluVal-63  
 68-AlaLeuLysAlaVal-72  
 110-TyrAlaLeuGluGlyIleSerAspLeuIleAlaThrValArgLysIleArgGln-127  
 136-ThrGlyIleValArg-140  
 151-AlaGluValSerGluGlnLeuArgSerHisPheGlyAspLeuLeu-165  
 170-IleProArgAsnIleArgLeuAla-177

**Antigenic Index - Jameson-Wolf**

1-MetArgArgArgAlaAlaAlaSerThrArgArgValCysSerProAlaPhe-17  
 24-MetArgThrCysSerArgArgArgTyrAlaAlaLysArgAlaAspThr-39  
 51-AlaGluIleGluLeu-55  
 57-GlnGluIleAlaArgGluValArgLeuLysAsnAlaLeu-69  
 71-AlaValAlaGluAspTyrAsp-77  
 83-CysProProSerLeu-87  
 123-ArgLysIleArgGlnAlaValAsnProAspLeuAspIle-135  
 141-ThrMetTyrAspSerArgSerArgLeuValAlaGluValSerGluGlnLeuArgSerHisPheGlyAspLeu-164  
 169-AlaIleProArgAsnIleArgLeuAlaGluAlaProSerHisGly-183

191-AlaGlnAlaLysGlyAlaLys-197  
 204-AspGluLeuAlaAlaArgValSerGlyLys-213

**Hydrophilic Regions - Hopp-Woods**

1-MetArgArgArgAlaAlaAlaSerThrArgArgValCys-13  
 26-ThrCysSerArgArgArgTyrAlaAlaLysArgAlaAspThr-39  
 51-AlaGluIleGluLeu-55  
 57-GlnGluIleAlaArgGluValArgLeuLysAsnAlaLeu-69  
 71-AlaValAlaGluAspTyrAsp-77  
 123-ArgLysIleArgGln-127  
 131-ProAspLeuAspIle-135  
 142-MetTyrAspSerArgSerArgLeuValAlaGluValSerGluGlnLeuArg-158  
 172-ArgAsnIleArgLeuAlaGlu-178  
 191-AlaGlnAlaLysGlyAlaLys-197  
 204-AspGluLeuAlaAla-208

**g568-2****AMPHI Regions - AMPHI**

32-AsnIlePheArgArgIle-37  
 49-LysAlaCysLysAsn-53  
 71-GluLysAlaAsnThrValArgTyr-78  
 82-SerLeuAlaGlnCysPheThr-88  
 112-ArgProLeuProSerIleIleThrAla-120  
 154-ProXxxAspLeuAsn-158  
 177-LeuValGlyGlnPheLeuAsnArgLeuPhe-186  
 200-GluGluPheAspValValVal-207  
 227-AspPheAsnGlnValPheAlaAlaPheLeu-236  
 241-HisArgHisAlaAspGlnIleAlaAspSerCysArgValGlnSerGln-256

**Antigenic Index - Jameson-Wolf**

12-LysAlaSerAlaSerAlaSerIlePro-19  
 21-ArgIleCysArgLeuLysArgSerArgLeuProAsnIlePhe-34  
 39-PheSerCysArgArgArgThrCysPheCysLysAlaCysLysAsnSerProIleArgAsnGluThrSerSerS  
 erGlyArgGlnGlyPheSerValGluLysAlaAsnThr-75  
 91-SerAsnAlaSerLysProArgLeu-98  
 102-IleArgGlyArgLysArgPhePheAla-110  
 141-PheArgGlySerAlaPheLysCysArgLeuAsnAlaAlaProXxxAspLeuAsnArg-159  
 166-GlySerGlnAsnLeu-170  
 213-ValAlaAspArgAspAlaSer-219  
 237-GlyGlnHisGlyHisArgHisAlaAspGlnIleAlaAspSerCysArgValGlnSerGln-256

**Hydrophilic Regions - Hopp-Woods**

21-ArgIleCysArgLeuLysArgSerArgLeu-30  
 41-CysArgArgArgThrCysPhe-47  
 49-LysAlaCysLysAsnSerProIleArgAsnGluThrSerSerGlyArgArgGlnPheSerValGluLysA  
 laAsnThr-75  
 93-AlaSerLysProArgLeu-98  
 102-IleArgGlyArgLysArgPhePheAla-110  
 144-SerAlaPheLysCysArgLeu-150  
 152-AlaAlaProXxxAspLeuAsnArg-159  
 213-ValAlaAspArgAspAlaSer-219  
 239-HisGlyHisArgHisAlaAspGlnIleAlaAspSerCysArgVal-253

**g569-2****AMPHI Regions - AMPHI**

29-AlaAlaPheCysGlyLeuIleAlaLeuThrAlaLeuTrpGluTyrAlaArgMetAlaGlyLeuCysLys-51  
 86-PheTrpLeuAlaValMetPro-92

-817-

161-IleAlaArgAlaIleSerProGlyLysSerTrpGluGlyAlaIle-175  
203-ThrValLeuIleGlyLeu-208

210-LeuThrValValSerValCysGlyAspLeuLeuGluSerTrpLeuLys-225

**Antigenic Index - Jameson-Wolf**

50-CysLysThrGluThrAsnHis-56  
98-LysTrpArgLeuAsnGlyGlyTrp-105  
124-SerLeuArgProHisProAspAspAlaLeu-133  
154-LysAlaLeuGlyLysHisLysIleAlaArg-163

165-IleSerProGlyLysSerTrpGlu-172

227-AlaAlaGlyIleLysAspSerSerAsnLeuLeuProGlyHis-240  
242-GlyValPheAspArgThrAspSer-249

**Hydrophilic Regions - Hopp-Woods**

50-CysLysThrGluThr-54  
127-ProHisProAspAspAlaLeu-133  
155-AlaLeuGlyLysHisLysIleAlaArg-163

227-AlaAlaGlyIleLysAspSerSerAsn-235  
243-ValPheAspArgThrAspSer-249

g570

**AMPHI Regions - AMPHI**

6-ArgAlaPheAlaAlaLeuIleGlyLeu-15  
22-HisAlaAspThrPheGlnLysIleGlyPheIleAsn-33  
43-GlnAlaArgAsnIleGlnLysThrLeuAspGly-53  
60-AspGluLeuGlnLysLeuGln-66  
81-LeuLysAspAlaLysLys-86  
91-GluLysTrpArgGlyLeuValGluAlaPheArg-101  
122-LeuGlnGlnAsnAlaAsnArgValIleValLysIle-133

**Antigenic Index - Jameson-Wolf**

33-AsnThrGluArgIleTyrLeuGluSerGlnAlaArgAsnIleGlnLysThrLeuAspGlyGluPheSerAlaArgGlnAspGluLeuGlnLysLeuGlnArgGluGlyLeuAspLeuGluArgGlnLeuAlaGlyGlyLysLeuLysAspAlaLysAlaGlnAlaGluGluLysTrpArgGly-95  
99-AlaPheArgLysGlnAlaGlnPheGluGluAspTyrAsnLeuArgArgAsnGluGluPheAla-120  
123-GlnGlnAsnAlaAsnArgVal-129  
133-IleAlaLysGlnGluGlyTyrAspValIle-142  
150-AsnThrGlnTyrAspValThrAspSerValIleLysGluMetAsnAlaArg-166

**Hydrophilic Regions - Hopp-Woods**

37-IleTyrLeuGluSerLysGlnAlaArgAsnIleGlnLysThrLeuAspGlyGluGluPheSerAlaArgGlnAspGluLeuGlnLysLeuGlnArgGluGlyLeuAspLeuGluArgGlnLeuAla-77  
79-GlyLysLeuLysAspAlaLysLysAlaGlnAlaGluGluLysTrpArgGly-95  
99-AlaPheArgLysLysGlnAlaGlnPheGluGluAspTyrAsnLeuArgArgAsnGluGluPheAla-120  
133-IleAlaLysGlnGluGlyTyr-139  
154-AspValThrAspSerValIleLysGluMetAsnAlaArg-166

g571

**AMPHI Regions - AMPHI**

10-ValValThrValPheGlyGlyIleGlySerAlaVal-22  
58-AlaAlaValAlaAspPhePheAlaVal-66

-818-

89-ValGluValPheLysGlu-94

**Antigenic Index** - Jameson-Wolf

30-LysGlnAlaGlnAlaAspGly-36  
 40-PheArgThrGlyHisArgGluGlnLeuGlyGlyAspVal-53  
 72-ArgAlaGluArgAlaAla-77  
 91-ValPheLysGluGlyAspPhe-97  
 105-ArgAsnAlaAspPheAlaAlaGluHisGlnArgGluGlyPheAla-119

**Hydrophilic Regions** - Hopp-Woods

30-LysGlnAlaGlnAlaAsp-35  
 42-ThrGlyHisArgGluGlnLeuGly-50  
 72-ArgAlaGluArgAlaAla-77  
 91-ValPheLysGluGlyAspPhe-97  
 105-ArgAsnAlaAspPheAlaAlaGluHisGlnArgGluGlyPheAla-119  
**g572**  
**AMPHI Regions** - AMPHI  
 10-LeuProSerAlaLeuAla-15  
 61-GlnValLeuProArgAspTyrThrAspArgLeuAsn-72  
 94-SerThrPheAspSerIleThrPro-101  
 154-IleHisSerMetValArg-159  
 183-GlyLeuProGluArgIleAspSerGly-191  
 200-LeuSerAlaLeuThr-204

**Antigenic Index** - Jameson-Wolf

18-GlnLysGlyLysThr-22  
 26-AlaAsnLysGluThrLeu-31  
 41-ThrAlaArgAlaAsnGly-46  
 51-ProValAspSerGluHis-56  
 63-LeuProArgAspTyrThrAspArgLeuAsnGluHisGlyIleAsp-77  
 97-AspSerIleThrProGluGlnAlaValLysHisProAsnTrpArgMetGlyArgLysIleSerValAspSer-120

122-ThrMetAlaAsnLysGlyLeuGluLeu-130  
 138-AsnCysProProAspLysLeuGluVal-146  
 158-ValArgTyrArgAspGlySerVal-165  
 170-GlyAsnProAspMetArgThr-176  
 184-LeuProGluArgIleAspSerGlyValGlyLysLeuAsp-196  
 205-PheGlnLysProAspPheGlyArg-212

224-AsnAlaGlyGlyAla-228

**Hydrophilic Regions** - Hopp-Woods

27-AsnLysGluThrLeu-31  
 41-ThrAlaArgAlaAsnGly-46  
 52-ValAspSerGluHis-56  
 66-AspTyrThrAspArgLeuAsnGluHisGlyIle-76  
 111-ArgMetGlyArgLysIleSerVal-118  
 126-LysGlyLeuGluLeu-130  
 140-ProProAspLysLeuGlu-145  
 158-ValArgTyrArgAspGlySer-164  
 170-GlyAsnProAspMetArgThr-176  
 184-LeuProGluArgIleAspSerGlyValGlyLysLeuAsp-196  
 206-GlnLysProAspPheGly-211  
**g574**

**AMPHI Regions - AMPHI**

6-ProAsnSerLeuLysLys-11  
 47-LeuLysGlnAlaLysSerIleProSerGlyPheTyrLysSerLeuAspAlaLeuValAspArgAsnSerGlyA  
 rgAlaAlaArgGluLeuAlaGluValValAsp-81  
 94-GlyLysLeuTyrArgGln-99  
 113-MetLeuAspSerProAspThr-119  
 175-GluLysAlaValGlu-179  
 218-AsnValGlyLysAlaIeuGluAlaAsnLysCys-229  
 246-PheProAlaAlaValGluAlaTyrAlaAlaIleGlu-257  
 266-MetValGlyGluLysLeuTyrGluAlaTyrAla-276  
 281-ProGluGluGlyLeuAsnArgLeuThrGlyTyrMetGlnThrPheProGluLeuAspLeu-300  
 332-AsnGlyValTyrArg-336  
 357-ArgSerValIleGlyArgGlnLeuGlnArgSer-367

**Antigenic Index - Jameson-Wolf**

7-AsnSerLeuLysLysAlaAspMetAspAsn-16  
 45-ThrValLeuLysGlnAlaLysSerIleProSerGlyPheTyrLysSerLeuAspAlaLeuValAspArgAsnS  
 erGlyArgAlaAlaArgGluLeuAlaGluValValAspGlyArgProGlnSerTyrAsp-88  
 96-LeuTyrArgGlnArgGluGluAsnAspLysAlaIleAsnIleHisArgThrMetLeuAspSerProAspThrV  
 alGlyGluLysArgAlaArgVal-127  
 135-TyrGlnSerAlaGlyLeuValAspArgAlaGlu-145  
 151-LeuGlnAspGlyGluMetAlaArgGluAlaArgGln-162  
 168-TyrGlnGlnAspArgAspTrpGluLysAlaValGlu-179  
 185-SerHisAspGluGlnThrTyr-191  
 210-SerAsnPheAspAlaAlaArg-216  
 221-LysAlaLeuGluAlaAsnLysLysCysThrArg-231  
 238-AspIleGluHisArgGlnGlyAsn-245  
 277-AlaGlnGlyLysProGluGluGlyLeuAsnArgLeuThrGlyTyr-291  
 309-LeuIeuLeuLysGlyGluLysGluAlaAla-318  
 323-GluLeuValArgArgLysProAspLeuAsnGly-333  
 341-LysLeuSerAspLeuProAlaTrpLysAlaAspAlaAspMetMetArg-357  
 368-ValMetTyrArgCysArgAsnCysHisPheLys-378  
 386-CysProAlaCysAsnLysTrpGlnThrPheThrProAsnLysIleGluVal-402

**Hydrophilic Regions - Hopp-Woods**

7-AsnSerLeuLysLysAlaAspMetAspAsn-16  
 45-ThrValLeuLysGlnAlaLysSerIle-53  
 62-AspAlaLeuValAspArgAsnSerGlyArgAlaAlaArgGluLeuAlaGluValValAspGlyArgProGlnS  
 er-86  
 96-LeuTyrArgGlnArgGlyGluAsnAspLysAlaIleAsn-108  
 112-ThrMetLeuAspSerProAspThrValGlyGluLysArgAlaArgVal-127  
 140-LeuValAspArgAlaGlu-145  
 152-GlnAspGlyGluMetAlaArgGluAlaArgGln-162  
 169-GlnGlnAspArgAspTrpGluLysAlaValGlu-179  
 185-SerHisAspGluGlnThrTyr-191  
 211-AsnPheAspAlaAlaArg-216  
 221-LysAlaLeuGluAlaAsnLysLysCysThrArg-231  
 238-AspIleGluHisArgGlnGlyAsn-245  
 279-GlyLysProGluGluGlyLeuAsn-286  
 309-LeuIeuLeuLysGlyGluLysGluAlaAla-318  
 323-GluLeuValArgArgLysProAspLeu-331  
 341-LysLeuSerAspLeuAspPro-347  
 349-TrpLysAlaAspAlaAspMetMetArg-357  
 368-ValMetTyrArgCysArgAsnCysHis-376  
 398-AsnLysIleGluVal-402

-820-

**g575****AMPHI Regions - AMPHI**

31-ProValArgGlnValArg-36

93-TrpArgSerValAlaGluAlaGlyValSer-102

104-ThrAlaGlyLeuGlySerGlyArgThrAlaGlyPheSerAlaPheAlaSerGlyAla-122

124-ThrPheAlaSerGlyPheSerThrGly-132

149-GlySerAspGlyMetAspAlaValSerAlaLeu-159

**Antigenic Index - Jameson-Wolf**

3-CysLeuArgArgGlnAlaAlaArgCysThrAsnArgArgThrAspArgGlnThrVal-21

27-LeuArgGlnLysProValArgGlnValArgGlnArgValArgArg-41

49-GlnGlnValArgLysArgCysTyrArgPheArgArgSerAlaCysArgTrpGlnLysArgArgLeuLeuGlyGlyAlaAspSerAlaAlaVal-79

89-ThrGlyProGlyTrp-93

100-GlyValSerAspThrAlaGlyLeuGlySerGlyArgThrAla-113

129-PheSerThrGlyPheSerThr-135

147-LeuAspGlySerAspGlyMetAsp-154

**Hydrophilic Regions - Hopp-Woods**

3-CysLeuArgArgGlnAlaAlaArgCysThrAsnArgArgThrAspArgGlnThrVal-21

27-LeuArgGlnLysProValArgGlnValArgGlnArgValArgArg-41

50-GlnValArgLysArgCysTyrArgPheArgArgSerAlaCysArgTrpGlnLysArgArgLeuLeuGly-72

74-AlaAspSerAlaAlaVal-79

148-AspGlySerAspGlyMetAsp-154

**g576-1****AMPHI Regions - AMPHI**

31-AlaSerGluProAlaAlaAla-37

46-SerIleGlySerThr-50

63-GlyArgSerLeuLysGlnMetLys-70

82-ThrAspAlaMetGln-86

102-GlnGluValMetMetLysPheLeuGlnGlnGlnAlaLysAlaValGluLysHis-120

140-AlaLysAspGlyValLysThrThr-147

200-GlnValIleProGlyTrpThrGluGlyValArgLeuLeuLysGluGly-215

**Antigenic Index - Jameson-Wolf**

20-AlaCysGlyLysLysGluAlaAlaPro-28

30-SerAlaSerGluProAlaAla-36

40-AlaGlnGlyAspThrSerSerIleGlySerThrMetGlnGln-53

61-AspIleGlyArgSerLeuLysGlnMetLysGluGlnGlyAlaGluIleAspLeu-78

89-TyrAspGlyLysGluLysMetThrGluGlnAlaSln-102

109-LeuGlnGluGlnAlaLysAlaValGluLysHisAlaAspAlaLysAlaAsnLysGluLysGluAlaPheLeuLysGluAsnAlaAlaLysAspGlyValLysThrThrAlaSerGlyLeu-151

154-LysIleThrLysGlnGlyGluGlyLysGlnProThrLysAspAspIleVal-170

173-GluTyrGluGlyArgLeuIleAsp-180

183-ValPheAspSerSerLysAlaAsnGlyGlyPro-193

203-ProGlyTrpThrGlu-207

209-ValArgLeuLeuLysGluGlyGlyGlu-217

224-SerAsnLeuAlaTyrArgGluGlnGlyAlaGlyGluLysIleGlyPro-239

253-GlyAlaProGluAsnAlaProAlaLysGlnProAspGlnValAspIleLysLysValAsn-272

**Hydrophilic Regions - Hopp-Woods**

21-CysGlyLysLysGluAlaAlaPro-28

30-SerAlaSerGluProAlaAla-36

40-AlaGlnGlyAspThrSerSer-46

61-AspIleGlyArgSerLeuLysGlnMetLysGluGlnGlyAlaGluIleAspLeu-78

-821-

89-TyrAspGlyLysGluIleLysMetThrGluGluGlnAlaGln-102  
 112-GlnGlnAlaLysAlaValGluLysHisLysAlaAspAlaLysAlaAsnLysGluLysGlyGluAlaPheLeu  
 LysGluAsnAlaAlaLysAspGlyValLysThrThrAla-148  
 155-IleThrLysGlnGlyGluGlyLysGlnProThrLysAspAspIleVal-170  
 173-GluTyrGluGlyArgLeuIleAsp-180  
 185-AspSerSerLysAlaAsnGly-191  
 209-ValArgLeuLeuLysGluGlyGlyGlu-217  
 227-AlaTyrArgGluGlnGlyAlaGlyGluLysIleGlyPro-239  
 253-GlyAlaProGluAsnAlaProAlaLysGlnProAspGlnValAspIleLysLysValAsn-272  
 g577

**AMPHI Regions - AMPHI**

8-GlyLysIleValGlyAsnArgIleLeuArgMetProSerGluHis-22  
 26-PheTyrProLysProCysLysSerPheLysLeuThr-37  
 62-ThrValIleLysIle-67  
 104-AlaPheValValGlyIle-109  
 112-GlyMetPheAlaLeuPheGlyArg-119

**Antigenic Index - Jameson-Wolf**

1-MetGluArgSerGlyVal-6  
 14-ArgIleLeuArgMetProSerGluHis-22  
 28-ProLysProCysLysSerPheLysLeu-36  
 43-ValArgSerCysProCys-48  
 121-LeuSerLeuArgGlyGluAsnSerArgLeuArgAlaGluValLysLysSerAlaArgLeuSerGlyGlnLys  
 LeuThrAla-147  
 152-AsnAlaAlaGluSerAlaLysGlnPro-160

**Hydrophilic Regions - Hopp-Woods**

1-MetGluArgSerGlyVal-6  
 14-ArgIleLeuArgMetProSerGluHis-22  
 29-LysProCysLysSerPheLys-35  
 121-LeuSerLeuArgGlyGluAsnSerArgLeuArgAlaGluValLysLysSerAlaArgLeuSerGly-142  
 152-AsnAlaAlaGluSerAlaLysGlnPro-160  
 g578

**AMPHI Regions - AMPHI**

10-PheAlaAspPhePheLysAspPheAlaProGlnPheGlyGlyPheGlnAsn-26  
 34-AspPhePheAlaAlaPheLeuGlyGlyLeuGluGlyHisValGlyAsp-49  
 58-PheHisGlyValValAlaPhe-64  
 71-AsnThrAspAlaAlaArgPhe-77

**Antigenic Index - Jameson-Wolf**

13-PhePheLysAspPheAlaProGlnPheGlyGly-23  
 43-LeuGluGlyHisValGlyAspAlaAla-51  
 71-AsnThrAspAlaAlaArgPheAla-78  
 88-HisAsnGlnAsnIleGlnThrGlyAsnAspPheArgLeuGluArgGlyGlyValGly-106

**Hydrophilic Regions - Hopp-Woods**

73-AspAlaAlaArgPheAla-78  
 96-AsnAspPheArgLeuGluArgGlyGlyVal-105  
 g579

**AMPHI Regions - AMPHI**

6-PheAspPheLeuHisLeuIleSerValSerGlyTrpGlyHisLeuAlaGlu-22  
 49-ValAlaValMetArg-53  
 66-IleSerPheLeuCysAsn-71  
 115-LeuSerAsnPheAla-119  
 129-ProPheLysValGlyAspPheIleArgValGlyGlyPheGluGlyTyrValArgGluIleLys-149

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206-LeuLysAlaAlaAlaGlu-211  
 258-GlnValValGluAsnLeuArg-264

**Antigenic Index - Jameson-Wolf**

110-SerLeuLysAspGlnLeuSer-116  
 128-ArgProPheLysVal-132  
 136-IleArgValGlyGlyPheGluGlyTyrValArgGluIleLysMet-150  
 154-SerLeuArgThrThrAspAsnGluGluValValLeu-165  
 175-IleValAsnArgSerSerLeuProLeu-183  
 198-LeuLysValAlaLysGluAlaValLeu-206  
 216-ValGlnAsnGluGluArgGlnPro-223  
 231-GlyAspAsnAlaIle-235  
 244-AsnGluAlaAspArgTrpThrLeu-251  
 253-CysAspLeuAsnGluGlnValValGluAsnLeuArgLysValAsn-267  
 271-ProPheProGlnArgAspIleHis-278

**Hydrophilic Regions - Hopp-Woods**

110-SerLeuLysAspGlnLeu-115  
 144-TyrValArgGluIleLysMet-150  
 155-LeuArgThrThrAspAsnGluGluValVal-164  
 198-LeuLysValAlaLysGluAlaValLeu-206  
 216-ValGlnAsnGluGluArgGlnPro-223  
 244-AsnGluAlaAspArgTrp-249  
 254-AspLeuAsnGluGlnValValGluAsnLeuArgLysValAsn-267  
 273-ProGlnArgAspIleHis-278  
 g580  
**AMPHI Regions - AMPHI**  
 47-ProValSerAlaSerLys-52  
 54-SerLeuValLysProLeuSerGlnProLeuAla-64

**Antigenic Index - Jameson-Wolf**

1-MetAspSerProLysValGlyCysGly-9  
 48-ValSerAlaSerLys-52  
 66-AlaArgProGluAlaAlaHis-72  
 81-ArgProAspAlaLeuAlaAspAsnSerValSerProThrHisAlaThrSerGlyGluVal-100

**Hydrophilic Regions - Hopp-Woods**

1-MetAspSerProLysVal-6  
 66-AlaArgProGluAlaAlaHis-72  
 81-ArgProAspAlaLeuAla-86  
 96-ThrSerGlyGluVal-100  
 g581  
**AMPHI Regions - AMPHI**  
 43-SerHisPheIleSerLeu-48  
 56-ArgGluCysPheValGlyPhe-62  
 76-AlaThrAlaPheGlyArgIleAsnGln-84  
 90-GlnIleHisGlyPheLeuThrThrPheAlaGlyArgValAlaAsnProThrHisCysGlnSerGlnThr-112

**Antigenic Index - Jameson-Wolf**

8-GlyGlnThrGlyIleGluGlnAsnThrPheCysArgArgGlyPheThrArgIleAspMetGlyGlyAsnThrAspVal-33  
 35-ValGlnAlaAspArgGlyLeuThrSer-43  
 49-SerLysLeuGluThrGluValArgGluCysPhe-59  
 79-PheGlyArgIleAsnGln-84  
 98-PheAlaGlyArgValAlaAsnProThrHisCysGlnSerGlnThrAla-113

**Hydrophilic Regions - Hopp-Woods**

35-ValGlnAlaAspArgGlyLeu-41  
 49-SerLysLeuGluThrGluValArgGlu-57  
**g582**

**AMPHI Regions - AMPHI**

27-ThrAspAsnValThrArgLeuAla-34  
 65-ValArgSerSerLeu-69  
 91-GlyGluThrAlaAspIleTyrThrProLeuSer-101  
 139-SerSerProThrArg-143  
 169-IleAlaGluAsnLeuPhe-174  
 246-SerArgSerTrpAsnArgIleTyrAlaMet-255  
 263-LeuThrValIleProArgValTrpValArgAlaPheAspGlnSer-277  
 286-IleAlaAspTyrMetGlyTyr-292  
 334-LeuLysGlyValValArgGlyPheHisGlyTyrGlyGlu-346

**Antigenic Index - Jameson-Wolf**

26-LeuThrAspAsnValThr-31  
 34-AlaCysTyrAspArg-38  
 44-LeuProSerSerAlaGlyGlnGluGlyGlnGluSerLysAla-57  
 63-GluThrValArgSerSerLeuAspLysGlyGluAla-74  
 77-ValValGluLysGlyGlyAspAlaLeuProAlaAspSerAlaGlyGluThrAlaAsp-95  
 105-AspLeuAspLysAsnAspLeuArgGly-113  
 115-LeuGlyValArgGluHisAsnProMetTyr-124  
 130-TyrAsnAsnSerProAsnTyrAlaProSerSerProThrArgGlyThrThrValGlnGluLysPheGlyGln  
 GlnLysArgAlaGluThrLysLeu-161  
 165-PheLysSerLysIleIle-170  
 173-LeuPheLysThrArgAla-178  
 183-GlyTyrThrGlnArgSerAspTrpGlnIleTyrAsnGlnGlyArgLysSerAlaProPheArgAsnThrAsp  
 TyrLysPro-209  
 216-ProValLysAlaAspLeuProPheGlyGlyArgLeuArgMet-229  
 237-GlnSerAsnGlyGlnSerArgProGluSerArgSerTrpAsn-250  
 273-AlaPheAspGlnSerGlyAspLysAsnAspAsnProAspIleAlaAsp-288  
 291-GlyTyrGlyAspValLysLeuGlnTyrArgLeuAsnAspArgGlnAsnVal-307  
 312-ArgTyrAsnProLysThrGlyTyr-319  
 330-IleLysGlyLysLeuLysGlyValVal-338  
 342-HisGlyTyrGlyGluSerLeuIleAspTyrAsnHisLysGlnAsnGly-357  
 365-AsnAspTrpAspGlyIle-370

**Hydrophilic Regions - Hopp-Woods**

48-AlaGlyGlnGluGlyGlnGluSerLysAla-57  
 63-GluThrValArgSerSerLeuAspLysGlyGluAla-74  
 79-GluLysGlyGlyAspAlaLeuPro-86  
 88-AspSerAlaGlyGluThrAlaAsp-95  
 105-AspLeuAspLysAsnAspLeuArgGly-113  
 115-LeuGlyValArgGluHisAsn-121  
 140-SerProThrArgGlyThrValGlnGluLysPheGlyGlnGlnLysArgAlaGluThrLysLeu-161  
 165-PheLysSerLysIleIle-170  
 173-LeuPheLysThrArgAla-178  
 195-GlnGlyArgLysSerAlaProPheArgAsnThrAspTyrLysPro-209  
 225-GlyArgLeuArgMet-229  
 239-AsnGlyGlnSerArgProGluSerArgSerTrp-249  
 274-PheAspGlnSerGlyAspLysAsnAspAsnProAspIleAlaAsp-288  
 293-GlyAspValLysLeu-297  
 299-TyrArgLeuAsnAspArgGlnAsn-306

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332-GlyLysLeuLysGlyValVal-338

352-AsnHisLysGlnAsn-356

**g583****AMPHI Regions - AMPHI**

11-HisLeuAlaPheCysAlaPheCysGlyIle-20

28-ArgLeuHisAsnArgMetTyrAsnAlaAlaAlaArg-40

58-ValThrAspAlaGln-62

66-SerLysAsnGlyAspLysGlnIle-73

75-AspThrHisProGlnPro-80

117-GlyTyrAlaGlyTyrCysAspGln-124

141-AsnGlyGlyAsnHisThrAsp-147

162-GlyTyrGlyGlnCysGlnAsnGlnGlyAla-171

**Antigenic Index - Jameson-Wolf**

24-ThrAlaGlyAsnArgLeuHisAsnArgMetTyr-34

41-GlyIleGlyArgGlyAsnGlySerGlnGlnPheGlyLysSerGluThrValThrAspAlaGlnArgPheSerSerLysAsnGlyAspLysGlnIleSerAspThrHisProGlnIleSerAspThrHisProGlnProCysPheGluGlnThrAlaArgAsnHisAsnCysAspGlyAsnGlnProAsnGlnArgIleGlyGluArgThrGlnArgIleAlaHisArgArgAlaArgPhe-114

117-GlyTyrAlaGlyTyrCysAspGlnProAspGlyAsnAsnArgGlnArgAlaGlnArgHisAsnLeuAlaAspAsnGlyAsnHisThrAspLysHisSerGlnGlnArgProSerLeuAspProValGlyTyrGlyGlnCysGlnGlyAlaGlnTyrCysGlyAsnGlyGluGlyTyrArgPhe-182

190-AspLeuArgLysLysAspArgProGluLysSerGluLys-202

**Hydrophilic Regions - Hopp-Woods**

27-AsnArgLeuHisAsn-31

41-GlyIleGlyArgGlyAsnGlySer-48

51-GlnPheGlyLysSerGluThrValThrAspAlaGlnArgPheSerSerLysAsnGlyAspLysGlnIleSerAspThrHisPro-78

84-GlnThrAlaArgAsnHisAsnCysAspGlyAsnGlnProAsnGlnArgIleGlyGluArgThrGlnArgIleAlaHisArgArgAlaArgPhe-114

123-AspGlnProAspGlyAsnAsnArgGlnArgAlaGlnArgHisAsnLeuAlaAspAsnGlyGlyAsnHisThrAspLysHisSerGlnGlnArgProSerLeuArgLeuAspPro-160

178-GluGlyTyrArgPhe-182

190-AspLeuArgLysLysAspArgProGluLysSerGluLys-202

**g584****AMPHI Regions - AMPHI**

28-GluPheSerGluSerAlaGly-34

60-AlaGluPheValLysLysPheAsnAsnPheThrArgLys-72

116-PheAspAlaLeuAsnArgPheIleAlaAspVal-126

148-IleAspGlnValSerLysAsp-154

166-LeuAspGlyValLeuGly-171

**Antigenic Index - Jameson-Wolf**

37-ValAlaGlnAspThrMetSer-43

50-AlaGluGlyArgAspLysAsnAlaVal-58

61-GluPheValLysLysPheAsnAsnPheThrArgLysSerLysAsnGlySerPheLysThrGluLeuValSerArgSerAlaMetProArgTyrGlnTyrThrAsnGlyArgArgIleGlnThrGlyTrpGluGluArgAlaGluPheLyssAlaGluGlyArgAspPheAspAla-118

126-ValGlnThrAspAlaSerLeuGluAspThrAspPheSerValSerArgGluArgArgAsnGluValIleAspGlnValSerLysAspAlaValLeu-157

159-PheLysAlaArgAlaGluLysLeuAla-167

189-IleAlaGlyAspGlyAlaValArgAlaLysMetLeuArg-201

210-AsnMetLysGlyThrAspSerAlaAlaProGlyValGluGluIleSer-225

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**Hydrophilic Regions - Hopp-Woods**

50-AlaGluGlyArgAspLysAsnAlaVal-58  
 67-AsnAsnPheThrArgLysSerLysAsnGlySerPheLysThrGluLeuValSer-84  
 95-AsnGlyArgArgIleGlnThrGlyTrpGluGluArgAlaGluPheLysAlaGluGlyArgAspPheAspAla-118  
 130-AlaSerLeuGluAspThrAspPheSerValSerArgGluArgArgAsnGluValIleAspGlnValSerLysAspAlaValLeu-157  
 159-PheLysAlaArgAlaGluLysLeuAla-167  
 193-GlyAlaValArgAlaLysMetLeuArg-201  
 210-AsnMetLysGlyThrAspSerAlaAlaProGlyValGluGluIleSer-225  
 g585

**AMPHI Regions - AMPHI**

6-ArgIlePheAlaThrPheCysAlaValIleValCys-17  
 46-ThrThrLeuMetGlySerIleIleSer-54  
 65-ArgGluIleLeuThrGluTrpLys-72  
 93-AsnArgTyrIleAsp-97  
 136-AspAsnHisGlnAlaGlnArg-142  
 153-ProLeuAlaProIleTrp-158  
 178-LeuAlaGlyAsnIleAlaLysProIleArgIleLeuGlyAsnGlyMetAspArgValAlaGluArgGlu-200

**Antigenic Index - Jameson-Wolf**

36-AsnGlnPheAsnGlnArgArgThrIleGlu-45  
 56-PheLysThrArgGlyAspAsnGlyAlaArgGluIleLeuThrGluTrpLysAsnSerProValSer-77  
 84-GlnGlyAspGluLysLysAspIleLeu-92  
 99-TyrThrIleGluArgAlaArgLeu-106  
 119-IleGluTyrAspArgPheGlyGlu-126  
 134-GlyTrpAspAsnHisGlnAlaGlnArgLeuProSerPro-146  
 189-LeuGlyAsnGlyMetAspArgValAlaGluArgGluLeuGluAspArgValCysGlnGlnValArgAspArgAspAspGluLeuAlaAsp-218  
 225-ThrMetValGluLysLeuGlu-231

**Hydrophilic Regions - Hopp-Woods**

37-GlnPheAsnGlnArgArgThrIleGlu-45  
 56-PheLysThrArgGlyAspAsnGlyAlaArgGluIleLeuThr-69  
 84-GlnGlyAspGluLysLysAspIleLeu-92  
 100-ThrIleGluArgAlaArgLeu-106  
 119-IleGluTyrAspArgPheGlyGlu-126  
 139-GlnAlaGlnArgLeu-143  
 192-GlyMetAspArgValAlaGluArgGluLeuGluAspArgValCysGlnGlnValArgAspArgAspAspGluLeuAlaAsp-218  
 225-ThrMetValGluLysLeuGlu-231  
 g586

**AMPHI Regions - AMPHI**

12-AspAsnPheLysTyrPheTrpLysThr-20  
 30-IleLeuAlaAlaLeuGly-35  
 56-ValLeuAlaAsnIleValGluLysAlaGlnAsnLysAlaPro-69  
 80-LeuGlnGlnSerTyrProHisSerIleSer-89  
 177-SerGlnGluAlaLeuLysAsnTyrGlyGlnAlaLeuGluLysMetProGlnAspSerValGlyArg-198

**Antigenic Index - Jameson-Wolf**

4-HisLeuGluGluGlnGlnGluLeuAspAsn-13  
 43-GlnAsnArgAlaAlaSerGlnAsnGlnGluAla-53  
 60-IleValGluLysAlaGlnAsnLysAlaProGlnSerGluIleAsnAlaGluLeuSerLysLeuGlnGln-82  
 100-ThrGluPheAspAlaGlnArgTyrAspValAlaGluGly-112

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118-LeuSerAsnGlnLysAspSerLeu-125  
 140-GlnGlnLysLysTyrAspAla-146  
 153-ThrProValGluAlaAspPhe-159  
 164-MetGluThrLysGlyAspVal-170  
 172-AlaAlaGlnGluLysSerGlnGluAlaLeuLysAsnTyrGlyGlnAlaLeuGluLysMetProGlnAspSer  
 ValGlyArgGluLeuLeu-201  
 204-LysLeuAspSerLeuLys-209

**Hydrophilic Regions - Hopp-Woods**

4-HisLeuGluGluGlnGlnGluLeuAspAsn-13  
 45-ArgAlaAlaSerGlnAsnGlnGluAla-53  
 60-IleValGluLysAlaGlnAsnLysAlaProGlnSerGluIleAsnAlaGluLeuSerLysLeu-80  
 100-ThrGluPheAspAlaGlnArgTyrAspValAlaGluGly-112  
 120-AsnGlnLysAspSerLeu-125  
 140-GlnGlnLysLysTyrAspAla-146  
 153-ThrProValGluAlaAspPhe-159  
 164-MetGluThrLysGlyAspVal-170  
 172-AlaAlaGlnGluLysSerGlnGluAlaLeuLys-182  
 187-AlaLeuGluLysMetProGlnAspSerValGlyArgGluLeuLeu-201  
 204-LysLeuAspSerLeuLys-209

**g587**

**AMPHI Regions - AMPHI**

6-LeuProAlaLeuProAlaIleLeuProLeuSerAla-17  
 122-LysArgMetSerAspIleSerAlaGlyIleSerHis-133

**Antigenic Index - Jameson-Wolf**

27-AspIleMetThrAspLysGlyLysTrpLysLeuGluThr-39  
 45-AsnSerGluAsnSerArgAla-51  
 71-ThrGluIleGlnGluAsnGlySerAsnThr-80  
 95-GlyAsnThrAspIleTyrGlySerGlySer-104  
 108-HisGluGluArgLysLeuAspGlyAsnGlyLysThrArgAsnLysArgMetSerAspIle-127  
 135-PheLeuLysAspGlyLysAsnProAla-143  
 151-ThrValTyrGluLysSerArgAsnLysAlaSerLeuIleLysLysArgGlyLeuCys-169

**Hydrophilic Regions - Hopp-Woods**

27-AspIleMetThrAspLysGlyLysTrpLysLeu-37  
 47-GluAsnSerArgAla-51  
 72-GluIleGlnGluAsnGlySerAsn-79  
 108-HisGluGluArgLysLeuAspGlyAsnGlyLysThrArgAsnLysArgMetSerAspIle-127  
 135-PheLeuLysAspGlyLysAsn-141  
 151-ThrValTyrGluLysSerArgAsnLysAlaSerLeuIleLysLysArgGlyLeu-168

**g588**

**AMPHI Regions - AMPHI**

55-ArgGlyTyrThrGlySer-60

**Antigenic Index - Jameson-Wolf**

24-SerProTyrGlnGluThrGlyCysThrTyrGluGlyGlyIleGlyLysAspGlyLeuProSerGlyLysGlyI  
 leTrpArgCysArgAspGlyArgGlyTyrThrGlySerPheLysAsnGlyLysPheAspGlyGlnGly-70  
 85-PheAsnSerAspSerThrLysPheArgAsn-94  
 105-LeuAlaHisGlyArgPheAlaAlaSerGlnAsnGlyGluThr-118  
 124-MetArgThrArgHisAsp-129

**Hydrophilic Regions - Hopp-Woods**

36-GlyIleGlyLysAspGlyLeuProSer-44  
 49-TrpArgCysArgAspGlyArgGlyTyr-57

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61-PheLysAsnGlyLysPheAspGly-68  
 85-PheAsnSerAspSerThrLysPheArgAsn-94  
 124-MetArgThrArgHisAsp-129  
**g589**  
**AMPHI Regions - AMPHI**  
 18-AlaSerArgIleGluLysValLeu-25  
 54-ValAlaAspIleAlaLysIleIleGluLys-63  
 103-MetValGlyMetMet-107  
 127-ValLeuAlaSerIleValGlnLeuTrpLeuAla-137  
 155-MetAspValLeuValThrIle-161  
 198-PheValSerLeuGlyLysPheLeuGluHisArg-208  
 230-ValGlnArgAsnGlyGlu-235  
 245-GlnIleGlyAspLeuIleArg-251  
 315-LeuGlyAspMetAsnAlaLeuSerGluAlaGln-326  
 330-AlaProIleAlaArgValAlaAspLys-338  
 396-MetGlyLysAlaVal-400  
 471-IleValSerAlaAlaGln-476  
 482-IleProAlaAlaGln-486  
 502-glyValGlyLeuValLys-507  
 539-LysProIleGlyIlaPheAlaLeuSerAspAlaLeuLys-551  
 553-AspThrAlaGluAlaIleGlyArgLeu-561  
 591-AlaPheGlyAsnMetSerProCysAspLysAlaAlaGluValGlnLysLeuLysAlaAla-610  
 617-ValGlyAspGlyIleAsnAspAlaPro-625  
 640-AlaAspValAlaGluHisThr-646  
 653-GlnHisSerValAsnGlnLeu-659  
 680-AlaPhePheTyrAsnIleLeu-686

**Antigenic Index - Jameson-Wolf**

1-MetGlnGlnLysIleArgPhe-7  
 17-CysAlaSerArgIleGluLysValLeuAsnLysLysAspPheValGluSer-33  
 39-AlaSerGluGluAlaGlnValThrPheAspGlySerLysThrSerVal-54  
 59-LysIleIleGluLysThrGlyTyrGlyAlaLysGluLysThrGluAspThrLeuProGlnProGluAlaGluH  
 is-83  
 114-ThrArgHisAspTrp-118  
 148-IleLysGlyGlyLeu-152  
 205-LeuGluHisArgThrLysLysSerSerLeuAsn-215  
 228-ValasnValGlnArgAsnGlyGluTrpLysGlnLeuProIleAspGln-243  
 248-AspLeuIleArgThrAsnHisGlyGluArgIleAlaAla-260  
 262-GlyIleIleGluSerGlySerGlyTrpAlaAspGluSerHisLeuThrGlyGluSerAsnProGluGluLys  
 LysAlaGlyGly-289  
 298-ThrGluGlySerVal-302  
 323-SerGluAlaGlnGlySerLysAlaProIle-332  
 334-ArgValAlaAspLysAlaAla-340  
 361-IleLysGlyAspTrp-365  
 396-MetGlyLysAlaValLys-401  
 409-AlaAlaAlaMetGluGluAlaAlaHis-417  
 422-ValLeuAspLysThrGlyThrLeuThrGluGlyArgProGlnVal-436  
 443-ProAspSerGlyPheAspGluAspAlaLeu-452  
 459-ValGluGlnAsnAla-463  
 498-AlaGluValGluGly-502  
 507-LysSerGlyLysAlaGluPheAla-514  
 520-LysPheSerAspGlyVal-525  
 535-SerValAsnGlyLysProIle-541  
 548-AspAlaLeuLysAlaAspThrAlaGluAlaIleGlyArgLeuLysLysHisAsnIle-566  
 572-SerGlyAspAsnGlnSerThrVal-579

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596-SerProCysAspLysAlaAlaGluValGlnLysLeuLysAlaAlaGly-611  
 617-ValGlyAspGlyIleAsnAspAla-624  
 636-MetLysGlyGlyAlaAspValAlaGlu-644

**Hydrophilic Regions - Hopp-Woods**

1-MetGlnGlnLysIleArgPhe-7  
 19-SerArgIleGluLysValLeuAsnLysLysAspPheValGlu-32  
 39-AlaSerGluGluAlaGlnVal-45  
 48-AspGlySerLysThrSerVal-54  
 64-ThrGlyTyrGlyAlaLysGluLysThrGluAspThrLeuProGlnProGluAlaGluHis-83  
 205-LeuGluHisArgThrLysSerSerLeu-214  
 229-AsnValGlnArgAsnGlyGluTrpLys-237  
 253-AsnHisGlyGluArgIleAlaAla-260  
 262-GlyIleIleGluSer-266  
 270-TrpAlaAspGluSerHisLeuThrGlyGluSerAsnProGluGluLysLysAlaGlyGly-289  
 323-SerGluAlaGlnGlySerLysAlaProIle-332  
 334-ArgValAlaAspLysAlaAla-340  
 409-AlaAlaAlaMetGluGluAlaAlaHis-417  
 422-ValLeuAspLysThrGlyThrLeuThrGluGlyArgProGln-435  
 445-SerGlyPheAspGluAspAlaLeu-452  
 459-ValGluGlnAsnAla-463  
 498-AlaGluValGluGly-502  
 507-LysSerGlyLysAlaGluPheAla-514  
 548-AspAlaLeuLysAlaAspThrAlaGluAlaIleGlyArgLeuLysLysHisAsnIle-566  
 573-GlyAspAsnGlnSer-577  
 596-SerProCysAspLysAlaAlaGluValGlnLysLeuLysAlaAlaGly-611  
 638-GlyGlyAlaAspValAlaGlu-644

**g590****AMPHI Regions - AMPHI**

90-ValThrLeuValAsnHisIleThrHis-98  
 100-ProPheAlaGlyGlyPhe-105  
 123-LysValLeuGluArgPhePhe-129  
 132-GlnValProValSerLeu-137  
 177-TyrGlnLysGlyPheLysSerTyrArgAsnSer-187  
 213-GluThrSerAspGlyIleAsnProLeu-221  
 248-AsnGluLeuValAsnLeuVal-254  
 331-LysArgLysPheAla-335  
 420-LysMetLeuGluAsp-424  
 450-AspIleAsnGluThrLeuArgLeuMet-458  
 460-AspSerThrValGln-464

**Antigenic Index - Jameson-Wolf**

1-MetLysLysProLeu-5  
 26-LysAlaGluGluSerLeuThrGlnGlnGlnLysIleLeuGlnLysThrGly-42  
 48-SerHisGlnTyrAspArgGlyTrpPheThrSerThrGluThrThrValIleArgLeuLysProGluLeu-70  
 75-GlnLysTyrLeuProAspAsnLeuLys-83  
 111-IleGluThrGluPheLysTyrAlaProGluThrGluLysValLeuGlu-126  
 128-PhePheGlyLysGlnVal-133  
 144-AsnGlySerGlyLysMetGluVal-151  
 157-AspTyrGluGluLeuSerGly-163  
 179-LysGlyPheLysSerTyrArgAsnSerTyrAspAlaProLeu-192  
 196-LysLeuAlaAspLysGlyAspAlaAlaPheGlu-206  
 208-AlaHisPheAspSerGluThrSerAspGlyIleAsn-219  
 233-PheSerLeuGluTrpLysGluGlyValGlyValAspTyr-243  
 264-AsnProAsnGlySerIleAlaProSerLysIleGluValGly-277

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281-PheSerThrLysThrGlyGluSerGlyAla-290  
 292-IleAspSerGluGlyArgPheArgPhe-300  
 304-ValTyrGlyAspGluLysTyrGlyPro-312  
 329-ValLeuLysArgLysPheAla-335  
 338-SerAlaLysLysMetThrGluGluGlnIleArgAsnAspLeu-351  
 355-ValLysGlyAspAlaSerGly-361  
 378-LeuProGlnGlyLysIleAspValGlyGly-387  
 393-GlyMetLysGluAspLeuAsnGln-401  
 406-LeuLysLysThrGluAlaAsnIle-413  
 437-AsnAlaGluAspGluAlaGluAlaArgAlaSerIle-448  
 450-AspIleAsnGluThrLeu-455  
 466-MetAlaArgGluLysTyrLeu-472  
 485-LeuLysAsnAsnAlaLeuLysLeuAsnGlyLysThrLeuGlnAsnGluProAspProAspPheAspGluGly  
 AspMetValSerGlyGlnProHis-516

**Hydrophilic Regions - Hopp-Woods**

1-MetLysProLeu-5  
 26-LysAlaGluGluSerLeuThrGln-33  
 62-ThrValIleArgLeuLysProGluLeu-70  
 77-TyrLeuProAspAsnLeu-82  
 111-IleGluThrGluPhelysTyrAlaProGluThrGluLysValLeuGlu-126  
 147-GlyLysMetGluVal-151  
 157-AspTyrGluGluLeuSerGly-163  
 180-GlyPhelysSerTyrArgAsnSerTyr-188  
 196-LysLeuAlaAspLysGlyAspAlaAlaPheGlu-206  
 208-AlaHisPheAspSerGluThrSerAspGly-217  
 233-PheSerLeuGluTrpLysGluGlyValAspTyr-243  
 272-SerLysIleGluValGly-277  
 292-IleAspSerGluGlyArgPheArgPhe-300  
 304-ValTyrGlyAspGluLysTyrGlyPro-312  
 329-ValLeuLysArgLysPheAla-335  
 338-SerAlaLysLysMetThrGluGluGlnIleArgAsnAspLeu-351  
 355-ValLysGlyAspAla-359  
 381-GlyLysIleAspValGlyGly-387  
 393-GlyMetLysGluAspLeuAsn-400  
 406-LeuLysLysThrGluAlaAsnIle-413  
 437-AsnAlaGluAspGluAlaGluAlaArgAlaSerIle-448  
 450-AspIleAsnGluThrLeu-455  
 466-MetAlaArgGluLysTyrLeu-472  
 496-ThrLeuGlnAsnGluProAspProAspPheAspGluGlyAspMetValSer-512  
**g591**  
**AMPHI Regions - AMPHI**  
 6-AlaPheIlePheAla-10  
 17-LeuHisGluPheGlyHisTyrIleValAla-26  
 61-LeuGlyGlyTyrValLysMetValAsp-69  
 143-GlyAspLysIleGlnSerValAsnGlyValSerValGln-155  
 181-SerGlyAlaGlnThrValArgThrIleAspAlaAlaGlyThrProGluAlaGlyLysIleAlaLys-202  
 218-AlaGlyGlyValGluLys-223  
 234-ProGlyAspArgLeu-238  
 245-ProIleAlaSerTrpGlnGluTrpAlaAsnLeuThrArg-257  
 304-AlaTrpAspAlaGlnIleArg-310  
 313-TyrArgProSerValValArgAlaPheGly-322  
 324-GlyTrpGluLysThrValSerHis-331  
 335-ThrLeuLysPhePheGlyLysLeuIle-343  
 351-HisIleSerGlyProLeuThrIleAla-359

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373-TyrLeuGluPheLeuAlaLeu-379

**Antigenic Index - Jameson-Wolf**

44-PhePheThrArgLysArgGlyAspThrGlu-53  
 68-ValAspThrArgGluGlyGluValSerGluAlaAspLeu-80  
 84-PheAspLysGlnHisProAlaLysArg-92  
 128-ThrValGluProAspThrValAla-135  
 139-GlyPheGlnSerGlyAspLysIleGlnSer-148  
 156-AspTrpSerSerAlaGlnThr-162  
 187-ArgThrIleAspAlaAlaGlyThrProGluAlaGlyLysIleAlaLysAsnGlnGly-205  
 219-GlyGlyValGluLysGlySerProAlaGluLysAlaGlyLeuLysProGlyAspArgLeuThrAlaAlaAsp  
 GlyLysProIle-246  
 254-AsnLeuThrArgGlnSerProGlyLysLysIle-264  
 268-TyrGluArgAlaGlyGlnThrHisThrAlaAspIleArgProAspThrValGluGlnProAspHisThrLeu  
 -291  
 295-ValGlyLeuArgProGlnProAspArgAlaTrp-305  
 307-AlaGlnIleArgArgSerTyrArgProSerVal-317  
 327-LysThrValSerHisSer-332  
 343-IleSerGlyAsnAla-347  
 362-AlaGlyGlnSerAla-366  
 408-IleArgGlyLysProLeuGlyGluArgValGln-418

**Hydrophilic Regions - Hopp-Woods**

44-PhePheThrArgLysArgGlyAspThr-52  
 68-ValAspThrArgGluGlyGluValSerGluAlaAspLeu-80  
 84-PheAspLysGlnHisProAlaLysArg-92  
 129-ValGluProAspThrValAla-135  
 139-GlyPheGlnSerGlyAspLysIleGlnSer-148  
 193-GlyThrProGluIlaGlyLysIleAlaLys-202  
 220-GlyValGluLysGlySerProAlaGluLysAlaGlyLeuLysProGlyAspArgLeuThrAlaAlaAspGly  
 LysPro-245  
 256-ThrArgGlnSerProGlyLysLysIle-264  
 268-TyrGluArgAlaGlyGln-273  
 277-AlaAspIleArgProAspThrValGluGlnProAsp-288  
 299-ProGlnProAspArgAlaTrp-305  
 308-GlnIleArgArgSerTyrArg-314  
 362-AlaGlyGlnSerAla-366  
 411-LysProLeuGlyGluArgValGln-418  
 g592

**AMPHI Regions - AMPHI**

6-PheGlyGlnIlePheSer-11  
 21-GlyGlyLeuLeuGlyGlyLeuIle-28  
 50-AlaProAsnAlaAlaAlaAlaAlaAla-57  
 65-GlnGlyMetIleGlnMetLeuGlyValPheValAsp-76  
 94-ProTyrGlyAspLeu-98  
 109-ValSerGlnValGlyGlnTrp-115  
 153-ThrAlaValPheArgMet-158  
 165-TyrPheGlyAlaValAla-170  
 185-IleMetAlaTrpIleAsnLeuValAlaIleLeuLeuLeuSer-198

**Antigenic Index - Jameson-Wolf**

35-GlyIleLysArgGlyLeuTyrSerAsnGluAlaGlyMetGlySerAlaProAsnAla-53  
 57-AlaGluValLysHisProValSer-64  
 93-GlnProTyrGlyAspLeuSerGly-100  
 137-AlaTyrAlaGluSerAsnVal-143

-831-

206-ArgAspTyrThrAlaLysLeuLysMetGlyLysAspProGluPheLysLeuSerGluHisProGlyLeuLys  
ArgArgIleLysSerAspValTrp-237

**Hydrophilic Regions - Hopp-Woods**

35-GlyIleLysArgGlyLeuTyr-41  
57-AlaGluValLysHisProVal-63  
212-LeuLysMetGlyLysAspProGluPheLysLeuSerGlu-224  
226-ProGlyLeuLysArgArgIleLysSer-234

g593

**AMPHI Regions - AMPHI**

6-GlyLeuCysLysCysPheGlyGly-13  
41-SerThrLeuLeuAsnMetIleAlaGlyIleValArg-52  
87-HisMetSerAlaLeuGlu-92  
113-LeuSerAlaLeuAlaGlu-118  
125-AlaHisArgLysProGluLysLeuSerGlyGlyGlu-136  
159-PheSerSerLeuAsp-163  
165-HisLeuArgAspArgLeuArgArgMet-173  
217-GluThrLeuIleGlnThrProAlaGlyValGlnValAlaArgLeuMetGlyLeu-234  
259-LeuLeuSerLeuValArgLeuProAspSerLeuArg-270  
290-HisThrAspGlyIle-294

**Antigenic Index - Jameson-Wolf**

10-CysPheGlyGlyLysThrValAla-17  
24-ValGlyArgGlyLysIle-29  
33-LeuGlyArgSerGlyCysGlyLysSerThr-42  
50-IleValArgProAspGlyGlyGluIleArgLeuAsnGlyGluAsnIleThr-66  
69-ProProGluLysArgArgIle-75  
99-LysMetGlnLysMetProLysAlaGluAlaGluArgLeuAla-112  
119-ValGlyLeuGluAsnGluAlaHisArgLysProGluLysLeuSerGlyGlyGluLysGlnArgLeuAlaLeu-142  
157-GluSerPheSerSerLeu-162  
164-ThrHisLeuArgAspArgLeuArgArgMetThrAlaGluArgIleArgLysGlyGlyIle-183  
190-HisSerProGluGluAlaCysThrAlaAlaAspGluIleAlaVal-204  
206-HisGluGlyIleLeuGlnCysGlyThrProGluThrLeu-219  
233-GlyLeuProAsnThrAspAspAspArgHisIleProGlnAsnAla-247  
250-LeuAspAsnHisGlyThrGluCysArg-258  
264-ArgLeuProAspSerLeuArgLeu-271  
275-HisProGluHisGlyGlu-280  
289-GlnHisThrAspGlyIleSerGlyAsnGly-298  
300-ValArgIleArgValAspGluGlyArgIleValArgPheArg-313

**Hydrophilic Regions - Hopp-Woods**

25-GlyArgGlyLysIle-29  
36-SerGlyCysGlyLys-40  
51-ValArgProAspGlyGlyGluIleArgLeuAsnGly-62  
69-ProProGluLysArgArgIle-75  
99-LysMetGlnLysMetProLysAlaGluAlaGluArgLeuAla-112  
119-ValGlyLeuGluAsnGluAlaHisArgLysProGluLysLeuSerGlyGlyGluLysGlnArgLeuAlaLeu-142  
164-ThrHisLeuArgAspArgLeuArgArgMetThrAlaGluArgIleArgLysGlyGly-182  
191-SerProGluGluAlaCysThrAlaAlaAspGluIleAlaVal-204  
206-HisGluGlyLysIle-210  
236-AsnThrAspAspAspArgHisIlePro-244  
253-HisGlyThrGluCysArg-258  
264-ArgLeuProAspSerLeuArg-270

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275-HisProGluHisGlyGlu-280  
 289-GlnHisThrAspGlyIleSer-295  
 300-ValArgIleArgValAspGluGlyArgIleValArgPheArg-313  
**g594**  
**AMPHI Regions - AMPHI**  
 21-SerIleLeuArgLeu-25  
 108-AlaGlyArgLysCysGlnGluThrAlaAlaAla-118  
 138-AlaIleLysHisCysAsnPheThr-145

**Antigenic Index - Jameson-Wolf**  
 1-MetGlyAlaAspThrAspGlyAspLysAspValArgLeuAsnArgThr-16  
 51-ValGluHisProAsnArgPhe-57  
 75-HisLeuAspGlySerThrGlyGly-82  
 86-PheArgArgGluLysThrGlyHisLysArgArgCysHisThrGlnCys-101  
 103-HisSerAlaArgAlaAlaGlyArgLysCysGlnGluThr-115  
 137-ArgAlaIleLysHisCysAsn-143

**Hydrophilic Regions - Hopp-Woods**  
 1-MetGlyAlaAspThrAspGlyAspLysAspValArgLeuAsnArg-15  
 86-PheArgArgGluLysThrGlyHisLysArgArgCysHis-98  
 105-AlaArgAlaAlaGlyArgLysCysGlnGluThr-115  
**g595**  
**AMPHI Regions - AMPHI**  
 20-CysGlnProProGluAla-25  
 98-GlyLeuSerAspLysMetAsnArg-105  
 140-AlaAspLeuGluLysLeuProGlnProLeuAlaAspTyrLys-153  
 157-GlnClyGluValLys-161  
 170-PheThrGluAlaValLysAlaGlyAspIleGluLysAlaLys-183  
 196-IleGluProIleAlaGluLeuPheSerGluLeuAspProValIleAspAlaCysGluAspAspPheLysAsp  
 Gly-220  
 224-AlaGlyPheThrGlyPheHisArg-231  
 247-GluThrAlaAlaLysLeuMetThrAspValGluAlaLeuGlnLysGluIleAsp-264  
 274-ValGlyGlyAlaSerGluLeuIleGlu-282  
 311-SerLysLysIleValAspLeuPheArgProLeu-321  
 337-PhelysGlnValAsnGluIleLeuAlaLys-346  
 351-AspGlyPheGluThrTyrAspLysLeuSerGluAlaAsp-363  
 369-AlaProIleAsnAlaLeuAlaGluAspLeuAlaGlnLeuArgGlyIleLeuGlyLeu-387

**Antigenic Index - Jameson-Wolf**  
 1-MetArgLysPheAsn-5  
 21-GlnProProGluAlaGluLysAlaAlaPro-30  
 32-AlaSerGlyGluThrGlnSerAlaAsnGluGlyGlySer-44  
 50-AsnAspAsnAlaCysGluProMetAsnLeu-59  
 70-IleLysAsnAsnSerGlyArgLysLeuGluTrpGluIle-82  
 87-MetValValAspGluArgGluAsnIleAla-96  
 98-GlyLeuSerAspLysMetAsnArgAsnLeuLeuProGlyGluTyrGluMet-114  
 120-ThrAsnProArgGlyLysLeuValVal-128  
 130-AspSerGlyPhelysAspThrAlaAsnGluAlaAspLeuGluLysLeuPro-146  
 158-GlyGluValLysGluLeuAlaAlaLysThrLysThrPheThrGluAlaValLysAlaGlyAspIleGluLys  
 AlaLysSer-184  
 191-ValHisTyrGluArgIleGluProIle-199  
 204-SerGluLeuAspProValIleAspAlaCysGluAspAspPheLysAspGlyAlaLysAspAlaGly-225  
 238-ValGluLysAspValSerGlyValLysGluThrAlaIleAla-250  
 252-LeuMetThrAspValGluAlaLeuGlnLysGluIleAsp-264  
 269-ProProGlyLysValValGlyGlyAla-277

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279-GluLeuIleGluGluAlaAlaGlySerLysIleSerGlyGluGluAspArgTyrSerHisThrAspLeuSer  
 AspPheGlnAlaAsnAlaAspGlySerLysIleValAsp-316  
 322-IleGluAlaAlaLysAsnLysAlaLeuLeuGluLysThrAspThrAsnPheLysGlnValAsn-341  
 345-AlaLysTyrArgThrLysAspGlyPheGluThrTyrAspLysLeuSerGluAlaAspArgLysAlaLeu-36  
 7  
 374-LeuAlaGluAspLeuAlaGln-380

**Hydrophilic Regions - Hopp-Woods**

1-MetArgLysPheAsn-5  
 21-GlnProProGluAlaGluLysAlaAlaPro-30  
 32-AlaSerGlyGluThrGlnSerAlaAsnGluGlyGlySer-44  
 72-AsnAsnSerGlyArgLysLeuGluTrpGluIle-82  
 87-MetValValAspGluArgGluAsnIle-95  
 99-LeuSerAspLysMetAsnArg-105  
 110-GlyGluTyrGluMet-114  
 122-ProArgGlyLysLeuValVal-128  
 131-SerGlyPheLysAspPheAlaAsnGluAlaAspLeuGluLysLeuPro-146  
 158-GlyGluValLysGluLeuAlaAlaLysThrLysThrPheThrGluAlaValLysAlaGlyAspIleGluLys  
 AlalysSer-184  
 191-ValHistYrGluArgIleGluProIle-199  
 204-SerGlyLeuAspProValIleAspAlaCysGluAspAspPheLysAspGlyAlaLysAspAlaGly-225  
 238-ValGluLysAspValSerGlyValLysGluThrAlaAla-250  
 252-LeuMetThrAspValGluAlaLeuGlnLysGluIleAsp-264  
 279-GluLeuIleGluAlaAlaGlySerLysIleSerGlyGluGluAspArgTyrSerHis-298  
 308-AlaAspGlySerLysIleValAsp-316  
 322-IleGluAlaAlaLysAsnLysAlaLeuLeuGluLysThrAspThrAsnPhe-337  
 347-TyrArgThrLysAspGlyPheGluThrTyrAspLysLeuSerGluAlaAspArgLysAlaLeu-367  
 374-LeuAlaGluAspLeuAlaGln-380  
**g596-2**  
**AMPHI Regions - AMPHI**  
 9-MetLeuArgValSerLysValVal-16  
 50-LeuArgIleMetAlaGlyValAspLys-58  
 87-ValArgGluGluValGluSerGlyLeuGlyGluValAlaAlaAlaGlnLysArgLeuGluGluValTyrAlaG  
 luTyr-112  
 192-ProThrAsnHisLeuAsp-197  
 202-GluTrpLeuGluGlnPheLeuValArgPheProGly-213  
 296-ArgPheGluMetSerAsnTyr-303  
 322-LeuGlyAsnGluValIleGluPheValAsnValSerLysSerPhe-336  
 366-SerThrLeuPheLysMet-371  
 409-AspAsnIleAlaGlu-413  
 440-AspGlnSerLysIleAlaArgGlnLeuSerGly-450  
 483-LeuArgAlaLeuGluAspAlaLeuLeuGluPheAla-494

**Antigenic Index - Jameson-Wolf**

16-ValProProGlnLysThrIleIleLysAspIleSer-27  
 41-LeuAsnGlyThrGlyLysSerThrVal-49  
 54-AlaGlyValAspLysGluPheGluGlyGluAla-64  
 75-LeuProGlnGluProGluLeuAspProGluLysThrValArgGluGluValGluSerGlyLeu-95  
 99-AlaAlaAlaGlnLysArgLeuGluGluValTyr-109  
 112-TyrAlaAsnProAspAlaAspPheAspAlaLeuAlaGluGluGlnGlyArgLeuGlu-130  
 136-GlySerSerThrGlyGlyAlaGluHisGluLeuGluIleAlaAlaAspAlaLeuArgLeuProAspTrp  
 AspAlaLysIle-163  
 165-AsnLeuSerGlyGlyGluLysArgArgValAla-175  
 181-LeuSerLysProAspMet-186  
 190-AspGluProThrAsnHisLeuAspAlaGluSer-200

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219-ThrHisAspArgTyrPhe-224  
 233-LeuGluLeuAspArgGlyHisGlyIle-241  
 243-TrpLysGlyAsnTyrSerSer-249  
 251-LeuGluGlnLysGluLysArgLeuGluAsnGluAlaLysSerGluAlaAlaArgValLysAlaMetLysGln  
 GluLeuLeuTrpValArgGlnAsnAlaLysGlyArgGlnAlaLysProLysAlaArgLeuAlaArgPheGluGluM  
 etSerAsnTyrGluTyrGlnLysArgAsnGluThrGlnGlu-313  
 319-AlaGluArgLeuGlyAsnGluVal-326  
 333-SerLysSerPheGlyAspLysValLeu-341  
 360-ProAsnGlyAlaGlyLysSerThrLeu-368  
 373-AlaGlyLysGluGlnProAspSerGlyGluValLysIle-385  
 395-AspGlnSerArgGluGlyLeuGlnAsnAspLysThrValPhe-408  
 411-IleAlaGluGlyArgAspIleLeu-418  
 425-IleProAlaArgGlnTyrLeuGlyArgPheAsnPheLysGlySerAspGlnSerLysIleAlaArgGlnLeu  
 SerGlyGlyGluArgGlyArgLeuHisLeu-458  
 471-LeuAspLysProSerAsnAspLeuAspValGluThrLeuArgAlaLeuGlu-487  
 501-SerHisAspArgTrpPhe-506  
 516-AlaCysGluGlyAspSerLysTrp-523  
 527-AspGlyAsnTyrGlnGluTyrGluAlaAspLysLysArgArgLeuGlyLysGluGlyAlaLysProLysArg  
 IleLysTyrLysProValThrArg-558

**Hydrophilic Regions - Hopp-Woods**

54-AlaGlyValAspLysGluPheGluGlyGluAla-64  
 77-GlnGluProGluLeuAspProGluLysThrValArgGluGluValGluSerGlyLeu-95  
 99-AlaAlaAlaGlnLysArgLeuGluValTyr-109  
 113-AlaAsnProAspAlaAspPheAspAlaLeuAlaGluGlnGlyArgLeuGlu-130  
 141-GlyGlyAlaGluHisGluLeuGluIleAlaAlaAspAlaLeuArg-155  
 157-ProAspTrpAspAlaLysIle-163  
 167-SerGlyGlyGluLysArgArgValAla-175  
 181-LeuSerLysProAsp-185  
 190-AspGluProThrAsnHisLeuAspAlaGluSer-200  
 233-LeuGluLeuAspArgGlyHis-239  
 251-LeuGluGlnLysGluLysArgLeuGluAsnGluAlaLysSerGluAlaAlaArgValLysAlaMetLysGln  
 GluLeuGluTrp-278  
 280-ArgGlnAsnAlaLysGlyArgGlnAlaLysProLysAlaArgLeuAlaArgPheGluGluMetSerAsn-30  
 2  
 304-GluTyrGlnLysArgAsnGluThrGln-312  
 319-AlaGluArgLeuGlyAsnGluVal-326  
 373-AlaGlyLysGluGlnProAspSerGlyGluValLysIle-385  
 395-AspGlnSerArgGluGlyLeuGlnAsnAspLysThrValPhe-408  
 411-IleAlaGluGlyArgAspIleLeu-418  
 435-AsnPheLysGlySerAspGlnSerLysIleAlaArg-446  
 448-LeuSerGlyGlyGluArgGlyArgLeuHisLeu-458  
 472-AspGluProSerAsnAspLeuAspValGluThrLeuArgAlaLeuGlu-487  
 517-CysGluGlyAspSer-521  
 529-AsnTyrGlnGluTyrGluAlaAspLysLysArgArgLeuGlyLysGluGlyAlaLysProLysArgIleLys  
 Tyr-553  
 g597  
**AMPHI Regions - AMPHI**  
 6-SerAsnSerLeuLysGlnLeuGlnGlu-14  
 45-TrpAspLysPheGlnLysLeu-51  
 68-GlnIleSerArgPheValSerGly-75  
 101-LeuArgTyrThrArgTyrValAsnAla-109  
 111-AsnArgGluValValLysAspLeuGluLysGlnGln-122  
 132-IleAsnAsnGluLeuAlaArgLeuLysLys-141  
 144-AlaAsnValGlnSerLeu-149

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157-AspAlaAlaGluGlnThrGlu-163  
 170-LysIleSerLysAspAlaArg-176  
 189-AsnLysLeuLeuSer-193  
 253-ProSerValMetGlyIleGlySerAlaAspGlyPheSerArgMetGlnGlyArgLeuLysLysProValAsp  
 GlyValProThrGly-281  
 302-ProAlaThrValGluSerIleAla-309  
 314-SerTyrAlaAspGluLeuAspGlyTyrGlyLysVal-325  
 336-SerIleTyrAlaGlyLeuSerGluIleSerAlaGlyLys-348

**Antigenic Index - Jameson-Wolf**

7-AsnSerLeuLysGlnLeuGlnGluGluArgIleArgGlnGluArgIleArgGlnGluArgIleArgGlnAlaAr  
 gGlyAsnLeu-34  
 36-SerValAsnArgLysGlnArgGluAlaTrpAspLysPheGlnLysLeuAsnThrGluLeuAsnArgLeuLysT  
 hrGluValAlaAla-64  
 74-SerGlyAsnTyrLysAsnSerArgProAsnAla-84  
 91-AsnAlaGluProGlyGlnLysAsnArgPhe-100  
 107-ValAsnAlaSerAsnArgGluValValLysAspLeuGluLysGlnGlnLys-123  
 128-GlnGluGlnLysIleAsnAsnGluLeuAlaArgLeuLysLysIleGln-143  
 149-LeuLeuLysLysGlnGlyValThrAspAlaAlaGluGlnThrGluSerArgArgGlnAsnAlaLysIleSer  
 LysAspAlaArgLysLeuLeuGluGlnLysGlyAsnGluGlnGlnLeu-188  
 191-LeuLeuSerAsnLeuGluLysLysAlaGluHisArgGlnAspAlaGluAlaLysArgLysLeuAla  
 GluAlaLysLeuAlaAlaGluLysAlaArgLysGluAlaAlaLysAlaGluAlaArgArgAlaGluM  
 etSerAsnLeuThrAlaGluAspArgAsnIleGlnAlaProSer-254  
 259-SerAlaAspGlyPheSerArgMetGlnGlyArgLeuLysLysProValAspGlyValProThr-280  
 284-GlyGlnAsnArgSerGlyGlyAspVal-292  
 314-SerTyrAlaAspGluLeuAspGlyTyrGly-323  
 329-AspHisGlyGluAsnTyr-334  
 343-GluIleSerAlaGlyLysGlyTyrThr-351  
 354-AlaGlySerLysIleGlyThrSerGlySerLeuProAspGlyGluGluGlyLeu-371  
 375-IleArgTyrArgGlyGlnValLeuAsnProSerGlyTrp-387

**Hydrophilic Regions - Hopp-Woods**

7-AsnSerLeuLysGlnLeuGlnGluGluArgIleArgGlnGluArgIleArgGlnGluArgIleArgGlnAlaAr  
 gGlyAsn-33  
 37-ValAsnArgLysGlnArgGluAlaTrpAspLysPheGlnLysLeuAsnThrGluLeuAsnArgLeuLysThrG  
 luValAlaAla-64  
 77-TyrLysAsnSerArgProAsn-83  
 91-AsnAlaGluProGlyGlnLysAsnArgPhe-100  
 110-SerAsnArgGluValValLysAspLeuGluLysGlnGlnLys-123  
 128-GlnGluGlnLysIleAsnGluLeuAlaArgLeuLysLysIleGln-143  
 149-LeuLeuLysLysGlnGlyValThrAspAlaAlaGluGlnThrGluSerArgArgGlnAsnAlaLysIleSer  
 LysAspAlaArgLysLeuLeuGluGlnLysGlyAsnGluGlnGlnLeu-188  
 193-SerAsnLeuGluLysLysAlaGluHisArgIleGlnAspAlaGluAlaLysArgLysLeuAlaGluAla  
 LysLeuAlaAlaAlaGluLysAlaArgLysGluAlaAlaGlnGlnLysAlaGluAlaArgArgAlaGluMet-240  
 244-ThrAlaGluAspArgAsnIleGln-251  
 267-MetGlnGlyArgLeuLysLysProValAsp-276  
 286-AsnArgSerGlyGlyAspVal-292  
 315-TyrAlaAspGluLeuAspGlyTyrGly-323  
 356-SerLysIleGlyThr-360  
 363-SerLeuProAspGlyGluGluGlyLeu-371  
**g601**  
**AMPHI Regions - AMPHI**  
 7-LeuValAspGluIleAspValProAsnIleGlyArg-18  
 26-AlaGlyIleProThrValPhe-32

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42-GlyLysGluLeuGlnAspAspIleAsnAsnAspAlaAlaLeuGluLysPheGluThrIleArgAlaTyrG  
 lyAlaLeu-68  
 70-MetGlyLeuIleSerAspValSerGlu-78  
 100-SerSerGlyLysThrValAsn-106  
 137-AlaValLeuGlyThrLeuValAsnLeuAlaAla-147  
 167-GlyAlaAlaAlaGlu-171

**Antigenic Index - Jameson-Wolf**

3-ProThrGlyAsnLeuValaspGluIleAspValProAsnIleGlyArgLeuLys-20  
 39-GlyTyrThrGlyLysGluLeuGlnAspAspIleAsnAsnAspAlaAlaAlaLeuGluLysPheGluThr-61  
 75-AspValSerGluAlaAlaAlaArgAlaArgThrProLysProAlaPhe-90  
 97-TyrThrAlaSerSerGlyLysThrValAsn-106  
 108-AlaAspIleAspLeuProVal-114  
 147-AlaGlyGlyThrArgLysGluValArgPheGlyHisProSerGlyThrLeuArg-165  
 170-AlaGluCysGlnAspGlyGln-176  
 183-ValMetSerArgSerAlaArgValIle-191  
 196-ValArgValProAspAspCysPhe-203

**Hydrophilic Regions - Hopp-Woods**

7-LeuValaspGluIleAspVal-13  
 40-TyrThrGlyLysGluLeuGlnAspAspIleAsnAsnAspAlaAlaAlaLeuGluLysPheGluThr-61  
 75-AspValSerGluAlaAlaAlaArgAlaArgThrProLys-87  
 99-AlaSerSerGlyLysThrValAsn-106  
 108-AlaAspIleAspLeuProVal-114  
 149-GlyGlyThrArgLysGluValArgPhe-157  
 170-AlaGluCysGlnAsp-174  
 186-ArgSerAlaArgValIle-191  
 198-ValProAspAspCysPhe-203  
 g602

**AMPHI Regions - AMPHI**

54-ArgGlnValAlaGlnIle-59  
 61-AlaGlyLeuHisValCysAsnGlyVal-69

**Antigenic Index - Jameson-Wolf**

5-GlnCysAspLysAlaArgHisMetArgPro-14  
 17-LeuGlyGlyGlnIleAsnArgHisArgGlnAlaSerAsnArgGlyLeuCys-33  
 35-PheGlyGlyPheGlnGlyAsnArgGluAlaGln-45  
 51-LeuIleAspArgGlnVal-56  
 88-GlyArgGlnMetProSerGluLysThrLeu-97  
 103-GlnMetArgAspTyr-107

**Hydrophilic Regions - Hopp-Woods**

5-GlnCysAspLysAlaArgHisMet-12  
 21-IleAsnArgHisArgGlnAlaSerAsnArgGly-31

39-GlnGlyAsnArgGluAlaGln-45

51-LeuIleAspArgGlnVal-56

91-MetProSerGluLysThrLeu-97

g603

**AMPHI Regions - AMPHI**

119-MetLeuLeuAsnGluLeuGluLys-126  
 131-AspArgIleLysAlaIleGlyArgArgIleAlaHisGlyGlyGluLysTyr-147  
 157-ValLeuAspGluLeuLysAlaCysIlePro-166  
 171-HisAsnProAlaAsnIleSerGlyIleLeuAla-181  
 185-HisPheProGlyLeuProAsnValGly-193  
 198-SerPheHisGlnThrMetPro-204

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211-AlaValProArgGluLeu-216  
 238-GluAlaAlaArgIleLeuGlyLysProLeuGluAspIleArgMetIleIleAlaHis-256  
 259-AsnGlyAlaSerIleThrAlaValLysAsnGlyLysSerVal-272  
 279-ThrProIleGluGly-283  
 298-TyrSerTyrProThr-302  
 323-ProGlyIleSerGluLeuProAsnAspCysArgThr-334  
 356-ArgLeuAlaLysTyrIleAlaSerMetAla-365  
 392-ValSerTyrLeuAsp-396

**Antigenic Index - Jameson-Wolf**

1-MetAspSerArgLeuArgGlyAsnAspAlaArgIleLysTyrGly-14  
 17-PheAlaGlnArgGlyArgLeuLysHisthrProProAsnAlaHisProPheSerAspGlyProAlaProLysLysGlnProGlnThrThrArgArgAsnIleMetSer-52  
 64-SerSerLeuLysGlyAlaValIleAspArgLysSerGlySer-77  
 83-LeuGlyGluArgLeuThrThrProGluAla-92  
 95-ThrPheAsnLysAspGlyAsnLysArgGlnValProLeuSerGlyArgAsnCysHis-113  
 123-GluLeuGluLysHisGlyLeuHisAspArgIleLysAlaIleGlyArgArgIleAlaHisGlyGlyGluLysTyrHisGlu-149  
 151-ValLeuIleAspGlnAspValLeuAspGluLeuLysAla-163  
 202-ThrMetProGluArgAlaTyr-208  
 214-ArgGluLeuArgLysLysTyrAlaPheArgArgTyrGlyPheHisGlyThrGlyMet-232  
 238-GluAlaAlaArgIleLeuGlyLysProLeuGluAspIleArg-251  
 257-LeuGlyAsnGlyAla-261  
 264-ThrAlaValLysAsnGlyLysSerValAspThrGlyMet-276  
 288-ThrArgCysGlyAspThrAspProGlyVal-297  
 310-AlaGlnValAspGluMetLeuAsnGluLysSerGlyPheProGlyIleSerGluLeuProAsnAspCysArgThrLeuGluIleAlaAspGluGlyArgGluAlaArgLeu-348  
 379-GlyIleGlyGluAsnSerArgAsnIleArgAlaLysThr-391  
 402-IleAspThrLysAlaAsnMetGluLysArgTyrGlyAsnSerGlyIle-417  
 419-SerProThrAspSerSerPro-425  
 431-ProThrAsnGluGluLeu-436

**Hydrophilic Regions - Hopp-Woods**

1-MetAspSerArgLeuArgGlyAsnAspAlaArgIleLysTyrGly-14  
 17-PheAlaGlnArgGlyArgLeuLysHisthrPro-27  
 34-SerAspGlyProAlaProLysLysGlnProGlnThrThrArgArgAsnIleMet-51  
 69-AlaValIleAspArgLysSerGly-76  
 83-LeuGlyGluArgLeuThrThr-89  
 96-PheAsnLysAspGlyAsnLysArgGlnValProLeuSerGlyArgAsnCysHis-113  
 123-GluLeuGluLysHisGlyLeuHisAspArgIleLysAlaIleGlyArgArgIleAlaHisGlyGlyGluLysTyrHisGlu-149  
 156-AspValLeuAspGluLeuLysAla-163  
 203-MetProGluArgAlaTyr-208  
 214-ArgGluLeuArgLysTyrAlaPhe-222  
 238-GluAlaAlaArgIleLeuGlyLysProLeuGluAspIleArg-251  
 267-LysAsnGlyLysSerValAspThr-274  
 289-ArgCysGlyAspThrAspPro-295  
 310-AlaGlnValAspGluMetLeuAsnGluLysSerGly-321  
 328-LeuProAsnAspCysArgThrLeuGluIleAlaAlaAspGluGlyArgGluGlyAlaArgLeu-348  
 380-IleGlyGluAsnSerArgAsnIleArgAlaLysThr-391  
 402-IleAspThrLysAlaAsnMetGluLysArgTyrGly-413  
 432-ThrAsnGluGluLeu-436  
 g604  
**AMPHI Regions - AMPHI**  
 35-SerValValGlnPheAla-40

-838-

49-IleAspValGlyGlyValTyrGly-56  
 98-AspGlyPheLysPhePheGln-104  
 111-AspValValLeuGlnLeuPheAlaArgValAlaGlnValGlyGlyValGlnGluAsn-129  
 146-ArgHisIleAsnPheValAspGlnIleAlaGlyTrpGlu-158

**Antigenic Index - Jameson-Wolf**

10-SerAlaAlaCysGlyLysValAspGlnArgThrGluHisGlyGlyAspGlyAspArgGlyAspAlaHis-  
 33  
 44-GlyAlaTyrArgGlnIleAspVal-51  
 65-GlyGlyGlyArgAspGluGlyGlyPheArgArgAlaArgAlaGlyGlyPhe-82  
 95-IleCysAlaAspGly-99  
 101-LysPhePheGlnArgGlyGlyIle-108  
 125-GlyValGlnGluAsnGlyArgAsnAlaArgValAspGluArgGlyPheGln-141

**Hydrophilic Regions - Hopp-Woods**

14-GlyLysValAspGlnArgThrGluHisGlyGlyAspGlyAspArgGlyAspAlaHis-33  
 66-GlyGlyArgAspGluGlyGlyPheArgArgAlaArgAla-78  
 125-GlyValGlnGluAsnGlyArgAsnAlaArgValAspGluArgGlyPhe-140  
 g605

**AMPHI Regions - AMPHI**

13-ArgGlnIleTrpLysIleAlaAsp-20  
 38-ThrLeuPheTyrArgPheIleSerGluAsnPheThrAspTyrMetGln-53  
 107-LysLeuLysGluIlePheThrAlaIle-115  
 126-GlnGlyIleLysGlyLeuPheAspAspPheAsp-136  
 141-ArgLeuGlySerThr-145  
 155-AlaValLeuLysGlyValAlaGluLeu-163  
 178-AspIleTyrGluTyrLeuIleSerAsn-186  
 188-AlaIleAsnAlaGlyLys-193  
 204-ValSerLysLeuIleAlaArg-210  
 217-GluLysValAsnLysIleTyrAspPro-225  
 240-PheAspGluHisIle-244  
 291-AspSerLysProPheAspAlaValValSerAsn-301  
 341-HisAlaLeuAsnTyr-345  
 355-ValSerPheProGly-359  
 433-GluHistIleAlaGluIleValLysLeuPheAla-443  
 452-AlaGlnAsnAlaAlaGlnGlnThr-459  
 478-ThrArgGluValIleAspIle-484  
 489-AlaGluIleSerGluThrValAlaLysIleGluArgLeuArgGluIleAspGluValIleAlaGluIle  
 Glu-513

**Antigenic Index - Jameson-Wolf**

5-MetGlnGlnArgAlaGlnIle-11  
 18-IleAlaAspGluValArgGlyAlaValAspGlyTrpAsp-30  
 44-IleSerGluAsnPheThrAspTyrMetGlnAlaGlyAspSerSerIleAsp-60  
 63-AlaMetProAspSer-67  
 71-ProGluIleLysAspAspAlaValLysVal-80  
 98-AlaHisGlnAsnGluGluIleAsnThrLysLeuLysGlu-110  
 116-GluSerSerAlaSerGlyTyrProSerGluGlnGlyIleLysGlyLeuPheAspAspPheAspThrThrSer  
 SerArgLeu-142  
 146-ValAlaAspLysAsnPheArgLeu-153  
 164-AspPheGlyAsnPheGluAspHisArgIle-173  
 190-AsnIleGlyLysSerGlyGlyGluPhePheThr-200  
 215-GlyGlnGluLysValAsnLysIleTyrAspProAlaCysGlySerGlySer-231  
 235-GlnAlaLysLysGlnPheAsp-241  
 253-GluIleAsnHisThrThrTyrAsn-260

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280-LeuGlyAspThrLeuThrAsnProLysLeuLysAspSerLysProPheAspAla-297  
 309-IleGlySerAspAspProThrLeuIleAsnAspAspArgPheAlaPro-324  
 330-ProLysSerLysAlaAsp-335  
 345-TyrLeuSerGlyArgGlyArgAlaAla-353  
 362-TyrArgGlyGlyAlaGluGlnLysIleArg-371  
 403-LeuSerLysHisLysAspAsnThrAsp-411  
 419-GlyPhePheLysLysGluThrAsnAsnAsnValLeuThrGluGluHisIle-435  
 442-PheAlaAspLysAlaAspVal-448  
 458-GlnThrValLysAspAsnGlyTyr-465  
 473-ValGluAlaGluAspThrArgGluValIleAsp-483  
 490-GluIleSerGluThrValAlaLysIleGluArgLeuArgArgGluIleAspGluValIleAlaGluIleGlu  
 Thr-514

**Hydrophilic Regions - Hopp-Woods**

18-IleAlaAspGluValArgGlyAlaValAsp-27  
 55-GlyAspSerSerIle-59  
 71-ProGluIleLysAspAspAlaValLysVal-80  
 98-AlaHisGlnAsnGluGluLeuAsnThrLysLeuLysGlu-110  
 131-LeuPheAspAspPheAspThrThrSerSerArgLeu-142  
 146-ValAlaAspLysAsnLysArgLeu-153  
 167-AsnPheGluAspHisArgIle-173  
 191-AlaGlyLysSerGlyGly-196  
 215-GlyGlnGluLysValAsnLysIleTyrAsp-224  
 235-GlnAlaLysLysGlnPheAsp-241  
 287-ProLysLeuLysAspSerLysProPhe-295  
 310-GlySerAspAspProThrLeuIleAsnAspAspArgPheAla-323  
 330-ProLysSerLysAlaAsp-335  
 348-GlyArgGlyArgAla-352  
 364-GlyGlyAlaGluGlnLysIleArg-371  
 404-SerLysHisLysAspAsnThrAsp-411  
 419-GlyPhePheLysLysGluThrAsn-426  
 430-LeuThrGluGluHisIle-435  
 442-PheAlaAspLysAlaAspVal-448  
 458-GlnThrValLysAspAsnGly-464  
 473-ValGluAlaGluAspThrArgGluValIleAsp-483  
 490-GluIleSerGluThrValAlaLysIleGluArgLeuArgArgGluIleAspGluValIleAlaGluIleGlu  
 Thr-514

**g606****AMPHI Regions - AMPHI**

72-LeuLeuAspHisMetThrArgAspGlu-80  
 90-AlaHisValGlyAsnGlyAsp-96  
 100-LeuThrLeuIleGlnGlyValValAsnThrPhe-110  
 116-ArgIleIleAlaAsn-120  
 139-SerMetValPheGlnIleLeuPheGlyPheLeuAlaSerLeuIleVal-154  
 171-LysLeuValGlyAlaProLysMetIleSerAlaLeuGlnArg-184  
 191-AspLeuProGluGluMetAsnAla-198

**Antigenic Index - Jameson-Wolf**

13-GluValIleAspThrProArgThrGluGluGluAla-24  
 31-GluAlaGlnAlaArgGlnTrpAsnLeuLysThrProGlu-43  
 48-HisSerProGluProAsnAla-54  
 57-ThrGlyAlaSerArgAsnSerSer-64  
 75-HisMetThrArgAspGluValGluAla-83  
 92-ValGlyAsnGlyAsp-96  
 122-IleAlaArgAsnAsnAspGlySerGlnSerGlnGlyThr-134

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159-ArgGlnArgGluTyrArgAlaAspAlaGlyAla-169  
 182-LeuGlnArgLeuLysGlyAsnProValAspLeuProGluGluMetAsn-197  
 203-GlyAspThrArgAspSerLeuLeuSerThrHisProSerLeuAspAsnArgIleAlaArgLeuLysSer-225  
 5

**Hydrophilic Regions - Hopp-Woods**

13-GluValIleAspThrProArgThrGluGluGluAla-24  
 59-AlaSerArgAsnSer-63  
 75-HisMetThrArgAspGluValGluAla-83  
 124-ArgAsnAsnAspGlySerGlnSer-131  
 159-ArgGlnArgGluTyrArgAlaAspAlaGlyAla-169  
 183-GlnArgLeuLysGlyAsnPro-189  
 191-AspLeuProGluGluMetAsn-197  
 203-GlyAspThrArgAspSerLeu-209  
 214-ProSerLeuAspAsnArgIleAlaArgLeuLysSer-225  
 g607  
**AMPHI Regions - AMPHI**  
 15-LysGluIleArgLeuThrAlaLeuAlaLeu-25  
 70-PheMetGlyIleMetAlaAlaLeuAsnProMetIleAlaGln-83

90-ThrGlyGluAlaGlyGlu-95  
 104-GlyLeuIleLeuGlyIlePheGlyMetIleLeuMetTrpAlaAlaIleThrProPheArgAsnTrpLeuThrLeuSerAspTyrValGluGlyThrMet-136  
 151-MetValHisArgAlaLeuHisAlaTyrAlaSerSer-162  
 226-PhePheArgProPheGly-231  
 244-PheLysGlnIleTrpLysIleGlyAla-252  
 320-AlaArgTyrIleSerGlyValSerLeu-328  
 337-IleThrValLeuSerLeuVal-343  
 348-ProLeuAlaSerMetTyr-353  
 373-PheGlnProAlaAspPheThrGlnCysIleAlaSerTyrAla-386  
 424-TyrGlyPheTrpThrAlaLeuIleAla-432

**Antigenic Index - Jameson-Wolf**

4-AspLeuAspArgPheSer-9  
 47-GlyAlaGlyLysGluAspLeuAla-54  
 86-GlyAlaGlyLysThrGlyGluAlaGlyGluThrGlyArgGln-99  
 121-ProPheArgAsnTrp-125  
 128-LeuSerAspTyrValGluGlyThr-135  
 160-AlaSerSerLeuAsnArgProArgLeu-168  
 222-AlaLysGluLysPhePheArg-228  
 234-AlaLysPheGlyLysProAspTrp-241  
 311-SerLeuGlyArgArgGluPheSerArgAlaArgTyrIleSer-324  
 348-ProLeuAlaSerMetTyrAsnAspAspProAla-358  
 388-ArgGlyTyrLysValThrLys-394  
 452-LeuValLysSerHisLysAlaVal-459

**Hydrophilic Regions - Hopp-Woods**

47-GlyAlaGlyLysGluAspLeuAla-54  
 89-LysThrGlyGluAlaGlyGluThrGlyArg-98  
 163-LeuAsnArgProArg-167  
 222-AlaLysGluLysPhePhe-227  
 312-LeuGlyArgArgGluPheSerArg-319

353-TyrAsnAspAspProAla-358  
 390-TyrLysValThrLys-394

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452-LeuValLysSerHisLysAlaVal-459

**g608****AMPHI Regions - AMPHI**

66-AlaIleArgLysIleLeuGln-72

93-ValLeuSerLeuLeu-97

103-ArgAlaSerAspGluLeuAlaArgIlePheGlyThr-114

124-AspIleGlyHisGlyIleLysGlnIleGlyArgAsnIleAlaGluGlnIleGlyGlyPheSerArgGluPro  
GluSerAlaAsnThrGlyAsnGluAlaLeuAlaAspCysLeuAspGluIleSerArgLeuArgAspGlyValGluA  
rgLeuAsnGluArgLeuAspArgLeu-181**Antigenic Index - Jameson-Wolf**

13-LeuGlnSerProAspSerArgSerGluLeuThr-23

39-LeuAlaGlyArgIleThrGluAspGlyLeuLeuSerAlaGlyAsnGlyPheAlaAspThrGluIleThrPheA  
rgAsnSerAlaIleArgIleLeuGlnGlyGlyGluProGlyAlaGlyAspIleArgLeuGluGly-85

98-GlySerLeuArgSerArgAlaSerAspGluLeuAla-109

116-AlaGlyIleGlySerArgAlaThrAspIle-125

130-LysGlnIleGlyArgAsnIleAla-137

140-IleGlyGlyPheSerArgGluProGluSerAlaAsnThrGlyAsnGluAlaLeuAlaAspCysLeuAspGlu  
IleSerArgLeuArgAspGlyValGluArgLeuAsnGluArgLeuAspArgLeuGluArgAspIleTrp-186**Hydrophilic Regions - Hopp-Woods**

15-SerProAspSerArgSerGluLeu-22

39-LeuAlaGlyArgIleThrGluAspGlyLeu-48

56-AlaAspThrGluIleThrPhe-62

65-SerAlaIleArgLysIleLeuGln-72

74-GlyGluProGlyAlaGlyAspIleArgLeuGluGly-85

100-LeuArgSerArgAlaSerAspGluLeuAla-109

118-IleGlySerArgAlaThrAsp-124

143-PheSerArgGluProGluSerAlaAsnThrGlyAsnGluAlaLeuAlaAspCysLeuAspGluIleSerArg  
LeuArgAspGlyValGluArgLeuAsnGluArgLeuAspArgLeuGluArgAspIleTrp-186**g609****AMPHI Regions - AMPHI**

15-ThrLeuAspAlaPheVal-20

30-HisHisIlePheHisGluPheArgValPheValGlyLeuPhe-43

52-PheGluGlnAlaValGlu-57

67-IleAspAsnPheLeu-71

114-ValAlaValCysProVal-119

**Antigenic Index - Jameson-Wolf**

10-AlaLeuAspAspGluThrLeu-16

20-ValGlyAsnGlnArgSerSerAspIleAla-29

71-LeuAspThrAspPheGlyIleGlySerGlnAlaAspGlyAsnValArg-86

99-GlyThrArgAlaLysArgGlyTyrGlyAsnHisAspLeu-111

124-ArgGluAlaAspIle-128

**Hydrophilic Regions - Hopp-Woods**

10-AlaLeuAspAspGluThrLeu-16

23-GlnArgSerSerAspIle-28

79-SerGlnAlaAspGlyAsnVal-85

100-ThrArgAlaLysArgGlyTyrGly-107

124-ArgGluAlaAspIle-128

**g610****AMPHI Regions - AMPHI**

6-MetGlnPheProTyrArg-11

18-MetArgArgMetArgArg-23

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97-ThrGlyArgAlaGlnGluAlaTyr-104  
 111-ProSerThrValArgAlaLeuArgGluArg-120  
 187-IleArgGluAlaLeuGlu-192  
 208-TyrAlaSerAlaPheTyrGlyProPheArgAsp-218  
 223-SerGlyAsnLeuGlyLysAlaAsp-230  
 268-LeuAspValValArgArgValLysAspGlu-277  
 296-AlaAlaValAlaAsn-300

**Antigenic Index - Jameson-Wolf**

11-ArgAsnValProAlaSerArgMetArgArgMetArgArgAspAspPheSerArgArgLeuMetArg-32  
 34-HisMetLeuThrAlaAsp-40  
 50-GlyAlaAlaArgGluGluAspValProSerMetProGlyValLysArgGlnSerLeuAsp-69  
 75-AlaGluGluAlaValLys-80  
 93-ThrAlaAsnLysThrGlyArgAlaGlnGluAlaTyrAsnProGluGlyLeuVal-110  
 115-ArgAlaLeuArgGluArgPhePro-122  
 139-GlyGlnAspGlyLeuThrAspGluAsnGlyTyrValMetAsnAspGluThrVal-156  
 175-AlaProSerAspMetMetAspGlyArgIleGlyAlaIleArgGluAlaLeuGluAspAlaGlyHis-196  
 215-ProGlyArgAlaArgValGlySerSerGlyAsnLeuGlyLysAlaAspLysLysThrTyrGlnMetAspPro  
 AlaAsnThrAspGluAlaLeuHis-246  
 250-LeuAspIleGlnGluGlyAlaAsp-257  
 270-ValValArgArgValLysAspGluPheGlyVal-280  
 302-TripleuAspGlyLysValVal-309  
 317-LysArgAlaGlyAlaAspGly-323  
 331-GluAlaAlaLysMetLeuLysArg-338

**Hydrophilic Regions - Hopp-Woods**

14-ProAlaSerArgMetArgArgMetArgArgAspAspPheSerArgArgLeuMetArg-32  
 34-HisMetLeuThrAla-38  
 50-GlyAlaAlaArgGluGluAspValProSer-59  
 61-ProGlyValLysArgGlnSerLeuAsp-69  
 75-AlaGluGluAlaValLys-80  
 95-AsnLysThrGlyArgAlaGlnGluAlaTyrAsn-105  
 115-ArgAlaLeuArgGluArgPhePro-122  
 141-AspGlyLeuThrAspGluAsnGly-148  
 151-MetAsnAspGluThrVal-156  
 178-AspMetMetAspGlyArgIleGlyAlaIleArgGluAlaLeuGluAspAlaGly-195  
 216-PheArgAspAlaValGly-221  
 225-AsnLeuGlyLysAlaAspLysLysThrTyrGln-235  
 238-ProAlaAsnThrAspGluAlaLeuHis-246  
 250-LeuAspIleGlnGluGlyAlaAsp-257  
 270-ValValArgArgValLysAspGluPheGly-279  
 317-LysArgAlaGlyAla-321  
 331-GluAlaAlaLysMetLeuLysArg-338

**g611**

**AMPHI Regions - AMPHI**

15-CysArgLeuPheGlyLysLeuSerLeu-23  
 26-ArgLeuLeuProGlyLeuCysArgGly-34  
 48-ArgSerValArgArgValIle-54  
 63-GlnValValAlaVal-67  
 104-ValPheIleGluAspPheVal-110  
 130-GlyPheLeuGlyAsnValLeuArgThr-138

**Antigenic Index - Jameson-Wolf**

1-MetProSerGluAsnGlyMetGlyLysArgGlnLeuAla-13  
 29-ProGlyLeuCysArgGlyGlyValCysArgGlyArgCys-41

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45-PheProSerArgSerValArgArgValIlePheArgArgValArgIle-60  
 119-AsnProAlaAspPheArgVal-125  
 142-AlaProGlnGluAsp-146

**Hydrophilic Regions - Hopp-Woods**

1-MetProSerGluAsnGlyMetGlyLysArgGlnLeuAla-13  
 35-GlyValCysArgGlyArgCys-41  
 53-ValIlePheArgArgValArgIle-60  
 121-AlaAspPheArgVal-125

**g612**

**AMPHI Regions - AMPHI**

6-AsnIleAlaLysLysLeuAlaGlyVal-14  
 57-LysAlaValGluLysCysAlaGluAsnValLeu-67  
 80-ValGlyAspPheProAsn-85

**Antigenic Index - Jameson-Wolf**

7-IleAlaLysLysLeuAlaGlyValAsp-15  
 17-IleAlaPheAspPheAspGly-23  
 27-AspPheGlyArgAspAspAlaValArgHisSerGlyVal-39  
 57-LysAlaValGluLysCysAlaGlu-64  
 98-HisHisArgAsnProTyrIleLysLeuAsnLysSerLysSerProAspIlePheArg-116  
 119-PheTyrGlyHisSerAsn-124

**Hydrophilic Regions - Hopp-Woods**

7-IleAlaLysLysLeuAlaGlyValAsp-15  
 28-PheGlyArgAspAspAlaValArg-35  
 57-LysAlaValGluLysCysAlaGlu-64  
 105-LysLeuAsnLysSerLysSerProAspIlePhe-115

**g613**

**AMPHI Regions - AMPHI**

95-MetProArgMetArgSerProSerSerLeuMetSerProAla-108  
 140-SerSerValMetArgProAla-146  
 166-GluArgLeuSerGlyLeuCysArgIle-174  
 184-AspIlePheSerAspTrpGly-190

**Antigenic Index - Jameson-Wolf**

1-MetSerArgSerSerLeuSerArgArgSerLeuArgArgSerThrProSerArg-18  
 23-SerSerArgGlnSerAlaArgAla-30  
 36-AlaAspSerGlySerArgGluAsnProProIleCysSer-48  
 73-ProLysIleArgAlaAsnSerSerAspAlaArgGluArgArgLeuProSerArgAspSerThrAla-94  
 96-ProArgMetArgSerProSerSerLeu-104  
 107-ProAlaProGlySerProPro-113  
 130-AlaLysProPheProAlaGluSerLysProSerSerValMetArgProAlaSer-147  
 159-ProAlaLysGluValSerSerGluArgLeuSerGlyLeuCysArgIleArgArg-176  
 178-MetMetGlyArgArgAlaAspIlePheSerAspTrpGlyGlyGluCys-193

**Hydrophilic Regions - Hopp-Woods**

1-MetSerArgSerSerLeuSerArgArgSerLeuArgArgSerThrProSer-17  
 24-SerArgGlnSerAlaArgAla-30  
 38-SerGlySerArgGluAsnProPro-45  
 73-ProLysIleArgAlaAsnSerSerAspAlaArgGluArgArgLeuProSerArgAspSerThrAla-94  
 96-ProArgMetArgSerProSer-102  
 133-PheProAlaGluSerLysProSerSerValMetArg-144  
 159-ProAlaLysGluValSerSerGluArgLeuSerGly-170  
 172-CysArgIleArgArg-176

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178-MetMetGlyArgArgAlaAspIle-185

**g614****AMPHI Regions - AMPHI**

20-SerGlnPheIleArgGlnValAsnAsnGly-29

65-AsnLeuIleGlnThrLeuLeuAsn-72

90-AlaLeuPheTyrSerLeuLeuProValLeu-99

144-ValIalaCysAspGluAlaLysGluGluValGlnGluIleValAspTyrLeuLysAlaProAsnArgTyr  
GlnSerLeu-170

210-AspPheValGluMetPheVal-216

222-ArgValArgAspMetPheGluGln-229

242-GluIleAspAlaValGlyArg-248

295-ProAlaLeuGlnArgProGlyArgPheAsp-304

333-SerValAspLeuLeuSerLeuAla-340

349-AlaAspLeuAlaLysLeuVal-355

**Antigenic Index - Jameson-Wolf**

7-LeuAspGlyLysLysGluAspAsnGlyGlnIleGlu-18

25-GlnValAsnAsnGlyGluValSerGly-33

45-LeuIleLysGlyGluArgThrAspLysSerThrPhe-56

59-AsnAlaProLeuAspAspAsnLeu-66

70-LeuLeuAsnLysAsnValArgValLysValThrProGluGluLysProSerAla-87

112-GlnAlaGlyGlyGlyGlyLysGlyGly-120

123-SerPheGlyLysSerArgAlaArgLeuAspLysAspAlaAsnLys-138

145-AlaGlyCysAspGluAlaLysGluGluValGlnGlu-156

161-LeuLysAlaProAsnArgTyrGlnSerLeuGlyGlyArgValProArgGly-177

182-GlySerProGlyThrGlyLysThrLeuLeu-191

207-SerGlySerAspPhe-211

219-GlyAlaSerArgValArgAspMetPheGluGlnAlaLysLysAsnAla-234

241-AspGluIleAspAlaValGlyArgGlnArgGlyAlaGlyLeuGlyGlyAsnAspGluArgGluGlnThr  
Leu-265

272-MetAspGlyPheGluSerAsnGln-279

287-ThrAsnArgProAspValLeuAspProAlaLeuGlnArgProGlyArgPheAspArg-305

311-LeuProAspIleArgGlyArgGluGlnXxx-320

323-ValHisSerLysLysValProLeuAspGluSerValAsp-335

341-ArgGlyThrProGlyPheSerGly-348

362-AlaGlyArgArgAsnLysValLysValAspGlnSerAspLeuLysThrProLysThrLysSer-382

**Hydrophilic Regions - Hopp-Woods**

7-LeuAspGlyLysLysGluAspAsnGlyGln-16

26-ValAsnAsnGlyGluValSer-32

46-IleLysGlyGluArgThrAspLysSerThr-55

61-ProLeuAspAspAsnLeu-66

73-LysAsnValArgValLysValThrProGluGluLysProSerAla-87

115-GlyGlyGlyLysGlyGly-120

125-GlyLysSerArgAlaArgLeuAspLysAspAlaAsnLys-138

145-AlaGlyCysAspGluAlaLysGluGluValGlnGlu-156

162-LysAlaProAsnArg-166

171-GlyGlyArgValProArg-176

221-SerArgValArgAspMetPheGluGlnAlaLysLysAsnAla-234

241-AspGluIleAspAlaValGlyArgGlnArgGlyAlaGly-253

256-GlyGlyAsnAspGluArgGluGlnThr-264

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273-AspGlyPheGluSer-277

287-ThrAsnArgProAspValLeuAsp-294

296-AlaLeuGlnArgProGlyArgPheAspArg-305

312-ProAspIleArgGlyArgGluGlnXxx-320

324-HisSerLysValProLeuAspGluSerValAsp-335

362-AlaGlyArgArgAsnLysVallysValAspGlnSerAspLeuLysThrProLysThrLys-381

**g616****AMPHI Regions - AMPHI**

6-LysMetValValGlyLeu-11

13-AsnProGlyLysGluTyrGlu-19

48-PheGlyGluValAlaArgAla-54

77-ValAlaAlaLeuAlaGlnPheTyrLys-85

115-GlyHisAsnGlyLeuLysAspIle-122

152-LeuAsnLysProSerAla-157

177-HisHisPheArgGlnMetGlyArg-184

203-ThrAlaPheSerArgPheProTyr-210

267-AlaProValGlnAsnLeuProAsnValAla-276

299-GlyGlyIleTyrSerLeuLeuPhe-306

319-PheAspLysAlaAla-323

363-GluCysAlaGlnAlaTrp-368

374-ThrGlySerLeuGlyAspValLeuAlaAspLeuThr-385

**Antigenic Index - Jameson-Wolf**

11-LeuGlyAsnProGlyLysGluTyrGluGlnThrArgHisAsnAlaGlyPhe-27

39-AlaSerPheLysGluGluLysLysPhePhe-48

55-AlaLeuProAspGly-59

70-MetAsnArgSerGlyGlnAla-76

86-IleLysProGluGlu-90

96-AspGluLeuAspIleProCysGlyArgIleLysPhe-107

109-LeuGlyGlyGlyAsnGlyGlyHisAsnGlyLeuLysAspIleGlnAla-124

138-IleGlyHisProGlyAspArgAsnLeu-146

152-LeuAsnLysProSerAlaGluAlaProProAlaAsnArgArgCysArgArgGlnIleProAlaGlyArgThrArgHisHisPheArgGlnMetGlyArgGlyAsnAlaLeu-188

197-ArgLeuLysProPheGlnThrAla-204

209-ProTyrProAsnSerHisGluArgArgThrGlnAla-219

221-TyrProAsnGlyIleHisProArgHisArgArgAsnProArgPheProAla-237

239-ArgMetGlnHisArgArgSerThrValArgArgArgSerGlyThrMetAlaArgHisThrCysArgThrArgArgGlnAla-265

275-ValAlaGlyArgGlyGlyGlyMetLysLeuProArgAsnArgPhe-289

308-AlaAlaAspPheAlaProProPro-315

317-ProHisPheAspLysAlaAla-323

338-AlaPheLysThrGlyLysLeuProIlePro-347

371-AlaThrArgThrGlySerLeuGly-378

394-AlaArgSerAlaCysArgProAsp-401

**Hydrophilic Regions - Hopp-Woods**

13-AsnProGlyLysGluTyrGluGlnThrArgHis-23

39-AlaSerPheLysGluGluLysLysPhePhe-48

86-IleLysProGluGlu-90

96-AspGluLeuAspIleProCysGlyArgIleLysPhe-107

117-AsnGlyLeuLysAspIleGlnAla-124

140-HisProGlyAspArgAsnLeu-146

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155-ProSerAlaGluAlaProProAlaAsnArgArgCysArgArgGlnIleProAlaGlyArgThrArgHisHis  
Phe-179

212-AsnSerHisGluArgThrGln-218

225-IleHisProArgHisArgArgAsnProArg-234

240-MetGlnHisArgArgSerThrValArgArgArgSerGlyThrMet-254

257-HisThrCysArgThrArgArgGlnIle-265

276-AlaGlyArgGlyGlyGly-281

283-LysLeuProArgAsnArgPhe-289

308-AlaAlaAspThrAla-312

318-HisPheAspLysAlaAla-323

338-AlaPheLysThrGlyLys-343

396-SerAlaCysArgProAsp-401

**g619**

**AMPHI Regions - AMPHI**

50-LysLeuAlaAlaLeuLeu-55

66-GlnLeuPheGlnThrLeuThrAsn-73

146-GlyValLePheGlyIleLeuPheArgSerLeuSerSerLeuLeuSerArg-162

165-AspProGluGluPhe-169

175-AsnMetPheAlaGlyPheAsn-181

246-AlaValValGlyProValSerPhePheGlyLeuLeuAlaAlaSerLeuAlaAsnHisPheSer-266

303-LeuSerValValValGluPhe-309

**Antigenic Index - Jameson-Wolf**

1-MetProSerGluLysAsnIle-7

12-GlySerSerArgProLeuArg-18

35-AsnValLysGlyAspTrpAsp-41

132-IleArgGlnGlyGlyArgAspLeuPro-140

163-MetIleAspProGluGluPheThr-170

182-ThrValArgSerGluLeu-187

205-GluArgTyrArgSerAspValHisLeuLeuGlyArgAspGlnAlaVal-220

265-PheSerProSerValArgHisSerVal-273

**Hydrophilic Regions - Hopp-Woods**

1-MetProSerGluLysAsnIle-7

13-SerSerArgProLeu-17

134-GlnGlyGlyArgAspLeuPro-140

163-MetIleAspProGluGluPheThr-170

183-ValArgSerGluLeu-187

205-GluArgTyrArgSerAspVal-211

213-LeuLeuGlyArgAspGlnAla-219

269-ValArgHisSerVal-273

**g620**

**AMPHI Regions - AMPHI**

8-IleValAlaValPheAlaLeuSerAla-16

31-IleSerAspArgSerVal-36

69-ValLysGlnMetPheGlyTyrThrLysLeuProGluGluProLysGlyIleArgValIleTyrValThrAspM

etGlyAsnValThrAspTrpThr-100

139-GlnAlaGluLysPhe-143

**Antigenic Index - Jameson-Wolf**

16-AlaCysArgGlnAlaGluAlaProProLeuProArgGlnIleSerAspArgSerValGlyHisTyrC

ysSerMetAsnLeuThrGluHisAsnGlyProLysAla-52

56-LeuAsnGlyLysProAspGlnProVal-64

75-TyrThrLysLeuProGluGluProLysGlyIle-85

92-AspMetGlyAsnValThrAspTrpThrAsnProAsnAlaAspThrGluTrpIleAspAlaLysLys-113

-847-

125-GlyMetGlyAlaGluAspAlaLeuProPheGlyAsnLysGluGlnAlaGluLysPheAlaLysAspLysGly  
 GlyLysValValGly-153  
 155-AspAspMetProAsp-159

**Hydrophilic Regions - Hopp-Woods**

18-ArgGlnAlaGluGluAlaProProProLeu-27  
 30-GlnIleSerAspArgSerVal-36  
 46-GluHisAsnGlyProLys-51  
 58-GlyLysProAspGln-62  
 77-LysLeuProGluGluProLysGlyIle-85  
 103-AsnIlaAspThrGluTrpIleAspAlaLysLys-113  
 127-GlyAlaGluAspAlaLeu-132  
 135-GlyAsnLysGluGlnAlaGluLysPheAlaLysAspLysGlyGlyLys-150  
 155-AspAspMetProAsp-159

**g622****AMPHI Regions - AMPHI**

28-LeuProGluAlaValArgAsnLeuAlaArg-37  
 62-GluGluIleIleArgTrpLeuAlaAsp-70  
 112-IleLeuGlyGlnIleLysAspAlaValArgAlaAlaGlnGlu-125  
 132-LysLeuAsnAlaLeuPheGlnLys-139  
 142-SerValAlaLysGluVal-147  
 169-GluGlnIlePheProAspIleGlyAsp-177  
 187-GluMetIleGluLeuValAla-193  
 214-AlaGlnGluLeuCysAspLys-220  
 232-AspLeuProIleIleLeuHis-238  
 288-AspLeuAsnAspAla-292  
 297-ValAspAspMetValAsnIleValGlnSerGly-307  
 324-GluLysValAlaGluPheValArgGlnGln-333  
 345-LeuArgAspGluGlyGluLys-351  
 354-LysGlnValLeuGluAsnAlaMetLysGlnLeuAlaLys-366  
 372-GluValLeuGluArgLeuSerValGlnLeuThr-382  
 384-LysLeuLeuHisSerProThrGlnThrLeuAsnLysAlaGlyGlu-398

**Antigenic Index - Jameson-Wolf**

16-SerIleArgGluLysLeuAla-22  
 30-GluAlaValArgAsnLeuAlaArgSerAsnAlaAla-41  
 49-ThrCysAsnArgThrGlu-54  
 57-CysValGlyAspSerGluGluIleIle-65  
 75-ProIleGluGluIleArgProTyr-82  
 87-AspMetGlnGluThrValArgHis-94  
 115-GlnIleLysAspAlaValAlaGlnGluGlnGluSerMetGlyAla-131  
 142-SerValAlaLysGluValArgThrAspThrAlaValGlyGluAsnSerVal-158  
 174-AspIleGlyAspLeuAsn-179  
 199-LysAsnProArgLeu-203  
 210-ThrLeuAlaArgAlaGlnGluLeuCysAspLysLeuGlyValAsnAlaGlu-226  
 257-GlyMetValGluArgAlaLeuLysGlnArgGlnSer-268  
 277-AlaValProArgAspIleGluAlaGluValGlyAspLeuAsnAsp-291  
 305-GlnSerGlyLysGluAlaArgGlnLysAlaAlaAlaAla-317  
 321-LeuValSerGluLysValAlaGluPheValArgGlnGlnGlyArgGlnSerVal-339  
 343-LysAlaLeuArgAspGluGlyGluLysAlaArgLysGlnValLeu-357  
 368-AlaThrAlaGluGluValLeuGlu-375  
 381-LeuThrAsnLysLeuLeuHisSerProThrGlnThrLeuAsnLysAlaGlyGluGluAspLysAspLeuVal-404

**Hydrophilic Regions - Hopp-Woods**

-848-

16-SerIleArgGluLysLeuAla-22  
 30-GluAlaValArgAsnLeuAlaArgSerAsnAlaAla-41  
 59-GlyAspSerGluGluIleIle-65  
 75-ProIleGluGluIleArg-80  
 87-AspMetGlnGluThrValArgHis-94  
 115-GlnIleIlysAspAlaValArgAlaAlaGlnGluGlnGluSerMetGly-130  
 142-SerValAlaIlysGluValArgThrAspThrAlaValGly-154  
 210-ThrLeuAlaArgAlaGlnGluLeuCysAsp-219  
 257-GlyMetValGluArgAlaIleUlysGlnArgGlnSer-268  
 277-AlaValProArgAspIleGluAlaGluValGlyAspLeuAsn-290  
 305-GlnSerGlyLysGluAlaArgGlnIlysAlaAlaAla-317  
 321-LeuValSerGluLysValAlaGluPheValArg-331  
 333-GlnGlnGlyArgGlnSer-338  
 343-LysAlaLeuArgAspGluGlyGluLysAlaArgLysGlnValLeu-357  
 368-AlaThrAlaGluGluValLeuGlu-375  
 392-ThrLeuAsnLysAlaGlyGluGluAspLysAspLeuVal-404  
**g624**

**AMPHI Regions - AMPHI**  
 17-GlyIleIleGlyIlePheLeuPro-24  
 45-ArgPheHisArgTrpLeuHis-51  
 58-ProMetValHisAsn-62  
 102-SerSerValPheCys-106

**Antigenic Index - Jameson-Wolf**  
 41-LysAlaSerProArgPheHisArgTrp-49  
 51-HisArgHisArgTyrPheGlyProMet-59  
 63-TrpGluGlnAsnGlyAlaValProArgLysAlaLys-74  
 114-TrpHisArgProGluSer-119

**Hydrophilic Regions - Hopp-Woods**  
 67-GlyAlaValProArgLysAlaLys-74  
 115-HisArgProGluSer-119  
**g625**  
**AMPHI Regions - AMPHI**  
 14-ThrArgArgValArgSerTrpLeuAla-22  
 24-SerSerGlyArgIleIleSerIleAlaAla-33  
 64-LysMetProProGluMetValTyrArgAla-73  
 78-MetLysGlyIleTyrSer-83

**Antigenic Index - Jameson-Wolf**  
 5-ArgLysMetLysLysMetThrMetCysThrArgArgValArg-18  
 57-ProPheLysSerProGlnThrLysMetProPro-67  
 73-AlaSerSerSerArgMetLysGly-80  
 96-AspAlaProLysThrLysLeuAsnGlyMetArgLysSerAsnValGln-111

**Hydrophilic Regions - Hopp-Woods**  
 5-ArgLysMetLysLysMetThrMetCysThrArgArgValArg-18  
 60-SerProGlnThrLysMetProPro-67  
 74-SerSerSerArgMetLysGly-80  
 96-AspAlaProLysThrLysLeuAsnGlyMetArgLysSerAsnValGln-111  
**g627**

**AMPHI Regions - AMPHI**  
 21-LeuGlnAsnLeuVal-25  
 56-IleAlaGluValGlyLysLeuPheLeuGlyIlePheIleThrIlePheProValLeuSerIleLeuLysAlaGlyGluAlaGlyAlaLeuGlyValValSerLeuValHisAspThrAlaGlyHisPro-99

-849-

109-GlyIleLeuSerAlaPheLeuAspAsnAla-118  
 153-PheMetGlyAlaLeuThrTyrileGlyAsnAlaProAsnPheMetValLys-169  
 180-ProThrPhePheArgTyr-185

**Antigenic Index - Jameson-Wolf**

3-GlyLeuTrpLysProGluHisProGlyPhe-12  
 41-ThrProLysGlnValArgAlaGlyAsnGluPheAsnPhe-53  
 94-AspThrAlaGlyHis-98  
 128-AlaGlyGlyAspAla-132  
 170-AlaIleAlaGluGlnArgGlyValPro-178

**Hydrophilic Regions - Hopp-Woods**

5-TrpLysProGluHisProGly-11  
 43-LysGlnValArgAlaGlyAsn-49  
 170-AlaIleAlaGluGlnArgGlyVal-177  
 g628  
**AMPHI Regions - AMPHI**  
 10-CysGlyProProAsnSerCysValSerIleLeuAlaAlaPhe-23  
 25-AspGlyThrSerAlaProAlaAla-32  
 34-HisThrTrpIleLeuArgSer-40

**Antigenic Index - Jameson-Wolf**

6-LysProAlaGlyCysGlyProProAsnSer-15  
 23-PheSerAspGlyThrSerAla-29  
 40-SerValArgArgLeuAsnThrAsnArgProArgLeuLysSerSerAla-55  
 77-MetAlaAsnGlySerAlaSerThr-84  
 91-GlyArgValArgSerAlaValHisLysProAspIleArgLeuArgArg-106  
 115-SerAlaSerGlyThr-119

**Hydrophilic Regions - Hopp-Woods**

40-SerValArgArgLeuAsnThrAsnArgProArgLeuLysSerSerAla-55  
 91-GlyArgValArgSerAlaValHisLysProAspIleArgLeuArgArg-106  
 g629  
**AMPHI Regions - AMPHI**

32-ArgTrpSerAspValPheSer-38  
 48-IleSerArgLeuProArgThrPhe-55  
 116-ValAlaAlaLeuIleGlyMetLeu-123  
 145-XxxIlePheGlyGlyValValGluAlaValAlaThrPhe-157  
 164-MetLeuGlnMetLeuGlyValTrpGlnGlnGlyAsp-175  
 206-IleLeuGlyLeuGlyGlu-211  
 253-ValProAsnIleValSerArgLeuMetGlyAspArgLeuArgGlnSer-268  
 285-IleIleGlyArgMet-289  
 300-ThrValPheGlyValLeu-305

**Antigenic Index - Jameson-Wolf**

38-SerLeuSerAspSerGln-43  
 50-ArgLeuProArgThr-54  
 77-AsnArgPheValGluProSerMetAlaGlyAlaGlyGln-89  
 130-ArgArgLeuProProThrAla-136  
 260-LeuMetGlyAspArgLeuArgGlnSer-268

**Hydrophilic Regions - Hopp-Woods**

260-LeuMetGlyAspArgLeuArgGln-267

g630  
**AMPHI Regions - AMPHI**

-850-

30-ProAspLeuLeuGlnGln-35  
 81-GlyGlyPheTrpGluValLeuPheAla-89  
 135-PheGlyGlyThrGlyLysAsnPhe-142  
 169-AlaValAspGlyTyrSerGlyAlaThrAlaLeuAlaGlnTrp-182  
 187-AlaAspGlyLeuLysAsnAlaVal-194  
 203-AspAlaPheIleGlyLysLeuProGlySerIleGlyGluValSer-217  
 230-PheAlaArgIleAlaSerTrpArgIleIleAlaGlyValMet-243  
 247-IleAlaMetSerSerLeuIleAsnPhe-255

**Antigenic Index - Jameson-Wolf**

37-IleAlaHisAspGlyAsnTyr-43  
 53-MetSerProGluAla-57  
 90-SerValArgLysHisGluIleAsnGlu-98  
 133-GluValPheGlyGlyThrGlyLysAsnPheMet-143  
 157-TyrProAlaAsnLeuSerGlyAspAla-165  
 186-GlyAlaAspGlyLeuLys-191  
 209-LeuProGlySerIleGly-214  
 257-GlySerAspThrLysAla-262  
 271-GlyThrTrpTrpLysAspAspTyrHisSerLeu-281

**Hydrophilic Regions - Hopp-Woods**

90-SerValArgLysHisGluIleAsn-97  
 258-SerAspThrLysAla-262  
**g638**

**AMPHI Regions - AMPHI**

17-LeuAlaArgPheValAspAsnIle-24  
 30-IleValAspIleValGlu-35  
 46-AspIleValGluHisPheGluProPheGlyLys-56  
 108-ProPheGlyAsnValValAlaAsp-115  
 118-ArgAlaGlyArgValPro-123  
 148-ArgIleGlyArgThrMetLysValTyrAlaGluArgIleIle-161  
 198-GluArgTyrValArgArgValTyrGly-206  
 212-LeuValProPheAspGlyCysGlyThrValGlyArg-223  
 242-SerGlnPheAspArgIleAlaArgProGlyAlaGlyLysAsnPheGlyLysValValLeuArgGlyAsnVal-265  
 304-TrpProAsnLysIleLysHisHis-311

**Antigenic Index - Jameson-Wolf**

13-GlyLysAsnAlaLeu-17  
 43-AlaAspGlyAspIle-47  
 52-GluProPheGlyLys-56  
 81-ValAspGlyGluThrGlnVal-87  
 99-AlaGlyIleGlyLysAsnAlaVal-106

113-ValAlaAspAspLeuArgAlaGlyArgValProAsnGlyAsn-126  
 148-ArgIleGlyArgThrMet-153  
 169-GlnGlyAlaArgGlyGlyPhe-175  
 188-HisThrGlyThrGlyAsnGlyGlnValAlaGluArgTyrValArg-202  
 216-AspGlyCysGlyThrValGlyArgProPheAsnArgAsnArgPheValAsp-232  
 240-AlaGlySerGlnPheAspArgIleAlaArgProGlyAlaGlyLysAsnPheGly-257  
 260-ValLeuArgGlyAsnValAspAspGlyCysArgCysArgLeuLysAsnAlaAlaGlyGlyLysTyrGlnHis-283

285-LeuGlnProTyrThrGluArgGlyCys-293

304-TrpProAsnLysIleLysHisHisSerAsn-313

-851-

319-AlaLysProProGluThrValArg-326

**Hydrophilic Regions - Hopp-Woods**  
**43-AlaAspGlyAspIle-47**

81-ValAspGlyGluThrGlnVal-87  
 113-ValAlaAspAspLeuArgAlaGlyArgValProAsn-124  
 148-ArgIleGlyArgThrMet-153  
 195-GlnValAlaGluArgTyrValArg-202  
 243-GlnPheAspArgIleAlaArgProGlyAlaGlyLysAsnPheGly-257  
 263-GlyAsnValAspAspGlyCysArgCysArgLeuLysAsnAlaAla-277  
 288-TyrThrGluArgGlyCys-293  
 320-LysProProGluThrValArg-326  
**g639-1**  
**AMPHI Regions - AMPHI**  
**95-TyrLysAsnAsnArg-99**  
 137-LeuLysValPheAspAsnIle-143  
 156-ValAsnTyrSerAspIleHisAspAsnIleIleAsnLysAla-169  
 268-AlaProValSerArg-272  
 289-GlnPheProAlaValLeuProGly-296

**Antigenic Index - Jameson-Wolf**  
 25-AsnIlePheAspAsnSerPhe-31  
 41-AlaMetValArgGluAsnLysIleValGly-50  
 52-AlaThrLeuArgValAsnGluArgGlyAsnGly-62  
 75-GlyAsnAspIleSerLysGlyArgAspGlyIlePheSerAsnThrSerThrHisAsnThrTyrLysAsnAsnA  
 rgPheSerAsp-102  
 111-TyrThrAsnAspSerGluValSerGly-119  
 135-GluArgLeuLysVal-139  
 145-ValGlySerArgAspGlyIle-151  
 159-SerAspIleHisAspAsnIleIleAsnLysAlaGlyLys-171  
 178-AlaAsnTyrAspLysLeuSerAlaAsnHis-187  
 202-GluGlyThrSerLeuHisAspAsnSer-210  
 212-IleAsnGlySerGluValLysTyrValSer-222  
 227-AspTrpSerGluGlyGlyHisGlyAsnTyrTrpSerAspAsnSerProPhe-243  
 245-LeuAsnGlyAspGlyPheGlyAspSerAlaTyrArgProAspGlyIleIle-261  
 296-GlyGlyValValAspSerLysProLeuMetLysProTyrAlaProLysIleGlnThr-314  
 317-GlnAlaMetLysAspGluLeuLeuLysGluAlaGluThrArgGlnSerGluArgGlyArgAlaGluAsnGly  
 SerLeuAsn-343

**Hydrophilic Regions - Hopp-Woods**  
 41-AlaMetValArgGluAsnLysIleValGly-50  
 52-AlaThrLeuArgValAsnGluArgGlyAsn-61  
 77-AspIleSerLysGlyArgAspGlyIle-85  
 95-TyrLysAsnAsnArgPheSerAsp-102  
 113-AsnAspSerGluValSerGly-119  
 135-GluArgLeuLysVal-139  
 146-GlySerArgAspGlyIle-151  
 179-AsnTyrAspLysLeuSer-184  
 253-SerAlaTyrArgProAspGlyIleIle-261  
 298-ValValAspSerLysProLeuMet-305  
 317-GlnAlaMetLysAspGluLeuLeuLysGluAlaGluThrArgGlnSerGluArgGlyArgAlaGluAsnGly  
 Ser-341  
**g640**  
**AMPHI Regions - AMPHI**

-852-

6-SerIleLeuLysSerIleGly-12  
 22-SerIleArgArgMetSer-27  
 47-LeuProAlaTyrAlaGluArgLeuProAspPheLeuAlaLysIleGlnPro-63  
 72-ArgTyrGlyLysPro-76  
 109-SerLysProIleAspThrLeuMetAla-117  
 127-AlaLysIleValAspHisHis-133  
 145-ArgValAspLysPheIleAsp-151  
 155-GlyLeuAsnProIleLysAsnProProThr-164  
 187-IleGlnArgSerTyrLysValIle-194  
 209-AlaSerAlaSerAsp-213  
 224-ArgProArgArgMetAlaAsnProAsp-232  
 255-LeuAspGlnIleAsnLysLeuPheGluLysGly-265  
 267-LysAlaGlyValAlaAspHisAlaGluGlnGly-277  
 281-AspThrPheIleAspLeuTyrVal-288  
 346-MetIleGlnGlyGluAsnSerPhe-353  
 359-GlnHisGluArgValValGluLeuSerAlaAlaAspAlaProArg-373

**Antigenic Index - Jameson-Wolf**

24-ArgArgMetSerAlaPheArgAlaArgIle-33  
 50-TyrAlaGluArgLeuProAspPhe-57  
 59-AlaLysIleGlnProSerGluIlePheProGlyAlaAspArgTyrGlyLysProGluGlyLysProMetVal-82  
 84-ArgValTyrLysGlyAspGluGlnLeu-92  
 101-AlaValAsnThrArgGlyTyrSerSerLysProIleAsp-113  
 128-LysLeuValAspHisHisGlu-134  
 142-ProGlnSerArgValAspLysPheIleAsp-151  
 159-IleLysAsnProProThrProSerValAlaProGlyAsp-171  
 184-AsnAspSerIleGlnArgSerTyrLys-192  
 196-AsnGlnTyrArgLeuGlySerAspLysAlaLeuGln-207  
 209-AlaSerAlaSerAspValArgGluAlaAlaProAlaSerGluThrArgProArgArgMetAlaAsnProAspLysGlnAspIle-236  
 241-GluLeuLeuLysGlnLysAla-247  
 257-GlnIleAsnLysLeuPheGluLysGlyGlyLysAlaGlyVal-270  
 272-AspHisAlaGluGlnGlyAspProAspAspThrPheIle-284  
 294-ProSerIleGlyLysSerLeuLeuGlyGluAspGlyTrp-306  
 309-LeuGlnLysArgLeuLysProGlyGln-317  
 322-ValAlaGlyGluGlyArgTyrSerTrpLysGlySerGlyTyrValArg-337  
 342-AspArgIleGluMetIleGlnGlyGluAsnSerPheArgPheThrAspAlaGlnHisGluArgValValGlu-365  
 367-SerAlaAlaAspAlaProArgPheGlyGlu-376  
 382-IleProGluGlyValAla-387  
 389-AspGlyAlaGluProTrpArg-395

**Hydrophilic Regions - Hopp-Woods**

24-ArgArgMetSerAlaPheArgAlaArgIle-33  
 50-TyrAlaGluArgLeuPro-55  
 68-ProGlyAlaAspArgTyrGlyLysProGluGlyLysProMetVal-82  
 85-ValTyrLysGlyAspGluGlnLeu-92  
 128-LysLeuValAspHisHisGlu-134  
 143-GlnSerArgValAspLysPheIleAsp-151  
 186-SerIleGlnArgSerTyrLys-192  
 200-LeuGlySerAspLysAlaLeuGln-207  
 210-SerAlaSerAspValArgGluAlaAlaProAlaSerGluThrArgProArgArgMetAlaAsnProAspLysGlnAsp-235  
 241-GluLeuLeuLysGlnLysAla-247

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257-GlnIleAsnLysLeuPheGluLysGlyGlyLysAlaGlyVal-270  
 272-AspHisAlaGluGlnGlyAspProAspAspThrPhe-283  
 309-LeuGlnLysArgLeuLysProGlyGln-317  
 324-GlyGluGlyArgTyrSerTrp-330  
 342-AspArgIleGluMetIleGlnGly-349  
 351-AsnSerPheArgPheThrAspAlaGlnHisGluArgValValGlu-365  
 367-SerAlaAlaAspAlaProArgPheLysGlu-376  
**g642**

**AMPHI Regions - AMPHI**

22-LysSerAlaCysArg-26  
 28-IleCysProLeuSerAlaIleSerAlaVal-37  
 63-SerGlyAspAspPhe-67  
 139-IleLysHisIleValArgAlaPhe-146  
 157-AspIleAlaGlyTrpValSerAlaPheLysThrLeuArgAlaGlnGluPheLeuGlnHisLeuArgGlyGly  
 Val-181  
 184-PheArgGlyGluGly-188  
 190-AspAspValArgLeu-194  
 209-AlaAspValAlaValLysAspPheGlyAsnLeuMetAlaAlaLeuAsp-224  
 241-ValGlnValValLysAspValPheHisAsnAlaValArgHisAlaAspGlnLeuGln-259  
 293-ValAspGlyValThrAspGlyAla-300  
 319-GlnValAspAspPheGlyGluPheAlaValPhe-329  
 348-PheArgGlyValAspVal-353  
 403-GluLeuLeuGlnArg-407  
 410-HisGlnArgAlaPheAspAlaGlyThr-418

**Antigenic Index - Jameson-Wolf**

1-MetArgTyrProPro-5  
 16-CysLeuLeuArgArgProLysSerAlaCysArgArgIleCysPro-30  
 45-ValGlnGlnGluGlyCysGly-51  
 58-TyrGluAspLysSerGlyAspAspPheAlaAspGluAspPheLeu-73  
 75-GlyAlaGlyValGly-79  
 98-GlyAsnGlyGlyLysAlaAspIle-105  
 126-PheGlyGlyAlaAspGluLeu-133  
 146-PheLysAsnArgGluGlyAlaAspIleAspGlyAspIle-158  
 166-LysThrLeuArgAla-170  
 184-PheArgGlyGluGlyPheAspAspValArgLeu-194  
 198-MetGlyAspGlyArgAspGlyArgAsnGlyMet-208  
 230-IleAspGluSerAspIleValAla-237  
 253-ArgHisAlaAspGlnLeuGlnAlaAlaAspLysAspValLeuGluArgAlaGlnThrGlySerValAla  
 ProGlyGlu-279  
 281-HisHisGlyCysArg-286  
 288-PheGlyIleAspAlaValAspGlyValThrAspGly-299  
 313-CysPheGlyAspGluGlnGlnValAspAspPheGly-324  
 332-PheGlyGlyAsnGluGluValAla-340  
 369-CysAsnArgArgAlaGlyGlyPhe-376  
 412-ArgAlaPheAspAlaGlyThrGlnArgAsnGly-422  
 425-ValMetProArgAsnPro-430

**Hydrophilic Regions - Hopp-Woods**

16-CysLeuLeuArgArgProLysSerAlaCysArgArgIleCys-29  
 58-TyrGluAspLysSerGlyAspAspPheAlaAspGluAspPheLeu-73  
 99-AsnGlyGlyLysAlaAspIle-105  
 129-GlyAlaAspGluLeu-133  
 146-PheLysAsnArgGluGlyAlaAspIleAspGlyAspIle-158  
 166-LysThrLeuArgAla-170

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187-GluGlyPheAspAspValArgLeu-194  
 199-GlyAspGlyArgAspGlyArgAsnGlyMet-208  
 230-IleAspGluSerAspIleValAla-237  
 253-ArgHisAlaAspGlnLeuGlnAlaAlaAspLysAspValLeuGluArgAlaGlnThr-272  
 292-AlaValAspGlyValThrAspGly-299  
 313-CysPheGlyAspGluGlnGlnValAspAspPheGly-324  
 334-GlyAsnGluGluGluValala-340  
 369-CysAsnArgArgAlaGly-374  
 417-GlyThrGlnArgAsnGly-422  
**g644**  
**AMPHI Regions - AMPHI**  
 26-GlyArgArgPheAspArgPro-32  
 55-MetAspThrAlaAlaPheLeuLysHisIleGluSerAlaPheProArgIlePheSerAspGlyIleAspLeuM  
 etArgTyrLeu-82  
 111-GlnPheGluIleGlnGluValLeuArgIleAlaGly-122  
 141-GlnProLeuGlnGluPheGlyGly-148  
 181-ArgGluMetGlnSerCysTyrGluTyr-189  
 202-TyrTrpGlnGlyAsn-206  
 224-LeuAlaLysValIleAspLeuLeu-231  
 267-ValMetLysLeuSerArg-272  
 278-LeuArgAlaPheGlnAsn-283  
 295-MetThrHisGlyIleMetGluTyrIleLeuAspAsnLeuAsnArgTyrValArgAsn-313  
 333-GluIleLeuTyrArgTyrValCysHis-341  
 343-ValSerProValAlaProValAlaHis-351  
 356-AlaAsnIleValIleThrLeuAla-363  
 372-GlnMetLeuGlnLys-376  
 399-PheThrIlePheGluGlyProAsn-406  
 408-MetLeuTyrAlaGluIleTyrAspGlnPheValArgAla-420  
 456-LeuProGluAspIleArgSerPhe-463  
 481-GlyLysIleIleAlaArgLeu-487  
  
**Antigenic Index - Jameson-Wolf**  
 1-MetProSerGluArgProAlaAspCysCys-10  
 22-ThrLeuAsnCysGlyArgArgPheAspArgProProIleAsnGlyAsnArgGlnArgLysProMetIleHisT  
 hrGluProSerAlaGlnProSerThrMetAsp-56  
 70-ArgIlePheSerAspGlyIleAspLeu-78  
 82-LeuProGluAspLysTrpLeu-88  
 100-LeuAspLysLysHisGlyGlyArgLysGlySerGln-111  
 160-PheLysGlyGluSerArgArgLeuGlyValThrGluProGluThrSerGly-176  
 178-AlaIleAlaArgGluMetGlnSerCysTyrGluTyrThrAspGlnGlnThr-194  
 202-TyrTrpGlnGlyAsnSerGlnAspPhe-211  
 216-AlaLysGluArgLysAsnGlyLysLeuAlaLys-226  
 235-LysThrTyrIleArg-239  
 241-GluThrLeuAlaSerGluGlyLeuArg-249  
 254-AlaValAsnArgIleAspAlaGluMet-262  
 269-LysLeuSerArgGlyAspAlaAlaGly-277  
 306-AsnLeuAsnArgTyrValArgAsnAspIleArgPheValAspTyrGluArgArgGluIleGlnArgArgHis  
 GlnVal-331  
 381-LysGlyPheGluArgGlyHisProAlaGly-390  
 403-GluGlyProAsnAspMetLeu-409  
 420-AlaThrAlaGluGluLysGluAlaGlyIleLysLeuAspLysAsnGlnThr-436  
 441-ValGlnThrAspValArg-446  
 449-AlaValAlaArgAspTyrAlaLeu-456  
 458-GluAspIleArgSerPheLeu-464  
 492-GlnGluGluHisGluAspThrThr-499

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505-AspIleArgLysAspIleLeuAspCysArgTyrCysGly-517

**Hydrophilic Regions - Hopp-Woods**

1-MetProSerGluArgProAlaAsp-8  
 25-CysGlyArgArgPheAspArgProProIleAsnGlyAsnArgGlnArgLysProMetIle-44  
 72-PheSerAspGlyIleAsp-77  
 82-LeuProGluAspLysTrpLeu-88  
 100-LeuAspLysLysHisGlyGlyArgLysGlySerGln-111  
 160-PheLysGlyGluSerArgArgLeuGlyValThrGluProGluThrSerGly-176  
 178-AlaIleAlaArgGluMetGlnSer-185  
 188-GluTyrThrAspGluGlnThr-194  
 216-AlaLysGluArgLysAsnGlyLysLeuAlaLys-226  
 254-AlaValAsnArgIleAspIleGluMet-262  
 269-LysLeuSerArgGlyAspAlaAlaGly-277  
 306-AsnLeuAsnArgTyrValArgAsnAspIleArgPheValAspTyrGluArgArgGluIleGlnArgArgHis  
 GlnVal-331  
 381-LysGlyPheGluArgGlyHisPro-388  
 420-AlaThrAlaGluGluLysGluAlaGlyIleLysLeuAspLysAsnGlnThr-436  
 441-ValGlnThrAspValArg-446  
 458-GluAspIleArgSerPheLeu-464  
 492-GlnGluGluHisGluAspThrThr-499  
 505-AspIleArgLysAspIleLeuAsp-512  
**g645**  
**AMPHI Regions - AMPHI**  
 87-ArgThrLeuProSerLeuAsnGlyLeuThrLys-97  
 149-ArgThrProLysArgCysSerSerSerIle-158  
 162-ProLysPheLeuAsnGluMetSerSerCysThrAsnLeuCys-175  
 211-SerAlaLysAspSer-215  
 250-SerValLeuProLysProThrSerProHisThrSerArg-262

**Antigenic Index - Jameson-Wolf**

24-AsnLeuCysCysLysLysSerArgMetThrCysSerSerSerArgSerCysProCys-44  
 47-ProIleArgAlaSerGlySerArgValSerSerArgSerArgIle-61  
 68-SerLeuCysArgLysAsnThrCysProProArgLeuSerSerArgAsnThrAlaSerArgThrLeuProSer-  
 91  
 99-PheThrAlaArgArgArgLeuGly-106  
 110-IleSerGluLysSerArgArgProSerSerAlaMetLeuArg-123  
 137-ThrLeuAlaArgArgArgLeuSerSerCysSerPheCysArgThrProLysArgCysSerSer-156  
 158-IleIleAsnLysProLysPheLeuAsn-166  
 168-MetSerSerCysThrAsn-173  
 199-LeuLysArgGluArgLeuAla-205  
 208-ThrGlyLysSerAlaLysArgSerAlaLys-217  
 222-CysSerThrArgSerValValGlyAla-230  
 243-AsnAlaAlaArgArgAlaThr-249  
 251-ValLeuProLysProThrSerProHisThrSerArg-262

**Hydrophilic Regions - Hopp-Woods**

26-CysCysLysLysSerArgMetThrCysSerSerSerArgSerCysPro-43  
 48-IleArgAlaSerGlySerArgValSerSerArgSerArgIle-61  
 69-LeuCysArgLysAsnThrCysProProArgLeuSerSerArgAsnThrAlaSerArgThr-88  
 99-PheThrAlaArgArgArgLeuGly-106  
 110-IleSerGluLysSerArgArgProSer-118  
 137-ThrLeuAlaArgArgArgLeuSer-144  
 149-ArgThrProLysArgCysSer-155

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158-IleIleAsnLysProLys-163  
 199-LeuLysArgGluArgLeuAla-205  
 210-LysSerAlaLysArgSerAlaLys-217  
 243-AsnAlaAlaArgArgAlaThr-249

**g647**

**AMPHI Regions - AMPHI**  
 38-GlyLysValCysArgCysPheGluGlnVal-47  
 69-ThrValPheArgGlnIleValGlyValVal-78

**Antigenic Index - Jameson-Wolf**

26-GlyLeuValLysGluArgAlaArg-33  
 39-LysValCysArgCysPhe-44  
 54-GlyThrValGlyGlnThrGluArgGlyThr-63  
 78-ValAspAspThrAspAlaGluArgThrAlaValHisSerArgGlyThrArgGlyPhe-96

**Hydrophilic Regions - Hopp-Woods**

26-GlyLeuValLysGluArgAlaArg-33  
 40-ValCysArgCysPhe-44  
 56-ValGlyGlnThrGluArgGlyThr-63  
 78-ValAspAspThrAspAlaGluArgThrAlaValHisSerArgGlyThrArgGly-95

**g648**

**AMPHI Regions - AMPHI**  
 7-ArgIleGluArgAlaValArg-13  
 15-AlaValIleAspValLeuAsn-21  
 94-AlaValAspLeuHisAlaIleIleLysLeuAlaAspThr-106  
 127-GlnGlyValGluGlnGly-132  
 148-AргLeuLysHisLeuLysGluGlyAsnAla-157  
 182-AlaArgAlaLeuGlyAsnValPheHis-190  
 194-GlySerGlyIleAspGlyIleGlnThrIleValAlaPheAsnGlnHisThr-210

**Antigenic Index - Jameson-Wolf**

1-MetAsnArgArgAsnAlaArgIleGluArgAlaValArg-13  
 24-AlaProGlyProGly-28  
 30-LeuLeuHisGlnArgGlyLysGlnValGlySerArgAsnAspThrLeuAla-46  
 65-GlyLysLysArgPheValGlnProArgAsnLeuValGlyArgLysGlnArgAsn-82  
 123-PheAsnMetProGlnGlyValGluGlnGlyCysArg-134  
 141-LeuArgThrArgPheAspArgArgLeuLysHisLeuLysGluGlyAsnAla-157  
 170-ValGlnProAlaAspThrSerGlyIleAspAlaAspAlaArgAla-184  
 191-AsnArgAlaGlySerGlyIleAspGly-199

**Hydrophilic Regions - Hopp-Woods**

1-MetAsnArgArgAsnAlaArgIleGluArgAlaValArg-13  
 33-GlnArgGlyLysGlnValGlySerArgAsnAspThr-44  
 65-GlyLysLysArgPheValGln-71  
 74-AsnLeuValGlyArgLysGlnArgAsn-82  
 127-GlnGlyValGluGlnGlyCysArg-134  
 141-LeuArgThrArgPheAspArgArgLeuLysHisLeuLysGluGlyAsnAla-157  
 172-ProAlaAspThrSerGlyIleAspAlaAspAlaArgAla-184

**g649**

**AMPHI Regions - AMPHI**  
 6-LeuSerAlaIleLeuGlyLeuVal-13  
 24-ProAlaHisArgHisThrLysHisIleSerLysAla-35  
 57-SerGlnGlyAsnVal-61  
 63-GluLeuArgGluAsnLys-68  
 71-ArgLysAlaPheArgThrLeuPro-78

**Antigenic Index - Jameson-Wolf**

20-GlyThrSerGluProAlaHisArgHisThrLysHisIleSerLysAlaAsnLys-37  
 40-LeuHisProGluCysArgLysTyrLeuGluArgArgAlaAla-53  
 56-ArgSerGlnGlyAsnValGlnGluLeuArgGluAsnLysLysAlaArgLysAlaPheArg-75  
 80-AlaGluGlnLysIleGlnCys-86  
 92-AlaPheAspAspPheAspGlyGlyArgPheArgArg-103

**Hydrophilic Regions - Hopp-Woods**

20-GlyThrSerGluProAlaHisArgHisThrLysHisIleSerLysAlaAsnLys-37  
 42-ProGluCysArgLysTyrLeuGluArgArgAlaAla-53  
 59-GlyAsnValGlnGluLeuArgGluAsnLysLysAlaArgLysAlaPheArg-75  
 80-AlaGluGlnLysIleGlnCys-86  
 92-AlaPheAspAspPheAspGlyGlyArgPheArgArg-103  
**g650**  
**AMPHI Regions - AMPHI**  
 15-SerValCysProGly-19  
 57-LeuTrpAspGluLeuArgGlnGly-64  
 72-ProGluLeuValArgArgHisGlu-79  
 89-PheAspArgValValAsn-94  
 137-SerGlyLeuTrpGln-141  
 173-AsnTyrLeuGlnTyrLeuTyrGlyLeuPheGlyAspTrpPro-186  
 198-AsnValGlyArgAlaValAsnArgAlaArg-207  
 218-LeuArgMetProAsnGluThr-224

260-ValGluProGlyArgProLeu-266  
 269-GluAlaIleAlaArgLeuAlaGlyIleThrGlnSer-280  
 314-SerAsnTyrLeuAsnAlaAlaProAsp-322  
 341-IleSerThrAlaThrGlyMet-347

349-IleAlaAspIleLysArgLeuAsnAsnLeu-358

433-ValArgThrGlyThrArgSer-439

**Antigenic Index - Jameson-Wolf**

1-MetSerLysLeuLys-5  
 24-GlnAsnThrSerSerHis-29  
 38-LeuAsnSerSerIleLeuAspLeuProProThrLysGlnTyrPhe-52  
  
 54-SerGlySerLeuTrpAspGluLeuArgGlnGlyPheArgMetGlyGluValAsnProGluLeuValArgArgH  
 isGluSerLysPheIleAla-84  
 87-SerTyrPheAspArgValValAsnArgSerArgPro-98  
 105-AsnGluValLysLysArgAsnMetProAla-114  
 128-ThrLysAlaLysSerHisValGlyAlaSerGly-138  
 145-AlaThrGlyArgHisTyrGlyLeuGluLysThrProValTyrAspGlyArgHisAspVal-164  
  
 192-TyrAsnTrpGlyGluGlyAsnValGlyArgAlaValAsnArgAlaArgAspGlnGlyLeuGluProThrTyr  
 GluAsnLeuArgMetProAsnGluThrArgAsnTyrVal-228  
 247-AsnIleSerAspIleAspAsnLysProTyr-256  
 259-AlaValGluProGlyArgProLeuAspAsnGluAlaIleAla-272  
 294-PheIleProLysAsnLysArgLysLeu-302  
 318-AsnAlaAlaProAspSer-323  
 332-ProAlaAlaLysThrSerLeuSerAspIleSerThr-343  
 350-AlaAspIleLysArgLeuAsnAsnLeuAsnGly-360

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370-LeuValAlaLysAsnGlyLysThrLeu-378  
 388-IleAspIleAspSerAsnThrProAspThrTyrArgSerAsnMetProAla-403  
 431-GluThrValArgThrGlyThrArgSerProCysProHisTyrArgThrArgProCysAspSerArgSerAla  
 ThrSerAsnArgLysThrAspCysHisAla-464

**Hydrophilic Regions - Hopp-Woods**

1-MetSerLysLeuLys-5  
 59-AspGluLeuArgGlnGlyPheArgMetGlyGluValAsnProGluLeuValArgArgHisGluSerLysPheI  
 leAla-84  
 92-ValValAsnArgSerArgPro-98  
 105-AsnGluValLysLysArgAsnMetProAla-114  
 128-ThrLysAlaLysSerHisVal-134  
 150-TyrGlyLeuGluLysThrProValTyrAspGlyArgHisAspVal-164  
 202-AlaValAsnArgAlaArgAspGlnGlyLeu-211  
 213-ProThrTyrGluAsnLeuArgMetProAsnGluThrArgAsnTyrVal-228  
 249-SerAspIleAspAsn-253

261-GluProGlyArgProLeuAspAsnGluAlaIleAla-272  
 296-ProLysAsnLysArgLysLeu-302  
 334-AlaLysThrSerLeu-338  
 350-AlaAspIleLysArgLeuAsn-356  
 373-LysAsnGlyLysThr-377  
 389-AspIleAspAsnThrProAspThrTyrArg-398  
 431-GluThrValArgThrGlyThrArgSerPro-440  
 444-TyrArgThrArgProCysAspSerArgSerAlaThrSerAsnArgLysThrAspCys-462  
**g652-1**

**AMPHI Regions - AMPHI**

6-AspIlePheAlaArg-10  
 52-ArgAspGlyAspLys-56  
 62-LysGlyValLeuLysAlaValGluHisValAsnAsnGlnIleAlaGlnAla-78  
 130-LeuTyrArgTyrLeuGlyGlyAlaGlyPro-139  
 149-ValIleAsnGlyGly-153  
 173-LysSerPheArgGluAlaLeuArgCys-181  
 184-GluIlePheHisAlaLeuLysLys-191  
 266-AlaGluPheAlaGluTyrLeuGluGlyLeuValAsn-277  
 299-LeuThrGluLysLeu-303  
 323-AlaGluGlyIleGluLysGlyVal-330  
 338-ValAsnGlnIleGlyThrLeuSerGluThrLeuLysAlaValAspLeuAlaLysCysAsnArgTyrAlaSer  
 -361  
 377-AspLeuAlaValAla-381  
 391-SerLeuSerArgSerAspArgMetAlaLysTyrAsnGlnLeuLeuArgIleGluGlu-409

**Antigenic Index - Jameson-Wolf**

11-GluIleLeuAspSerArgGlyAsnProThrValGlu-22  
 36-AlaValProSerGlyAlaSerThrGlyGlnLysGluAlaLeuGluLeuArgAspGlyAspLysSerArgTyrS  
 erGlyLysGlyValLeuLysAlaValGluHisValAsn-72  
 83-AspAlaAsnGlnSerTyr-89  
 97-LeuAspGlyThrGluAsnLysGlyAsnLeuGly-107  
 121-AlaAlaAlaGluAspSerGlyLeuPro-129  
 135-GlyGlyAlaGlyProMet-140  
 151-AsnGlyGlyGluHisAlaAsnAsnSer-159  
 173-LysSerPheArgGluAlaLeuArgCysGlyAla-183  
 190-LysLysLeuCysAspSerLysGlyPheProThrThrValGlyAspGluGlyGlyPhe-208  
 211-AsnLeuAsnSerHisLysGluAlaLeu-219

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243-CysAlaSerSerGluPheTyrLysAspGlyLysTyrHisLeuGluAlaGluGlyArgSerTyrThrAsn-26  
 5  
 283-SerIleGluAspGlyMetAspGluAsnAspTrpGluGly-295  
 299-LeuThrGluLysLeuGlyLysValGlnLeuValGlyAspAspLeu-314  
 318-AsnProLysIleLeuAlaGluGlyIleGluLysGlyVal-330  
 352-AspIleAlaLysCysAsnArgTyr-359  
 363-MetSerHisArgSerGlyGluThrGluAspSerThrIle-375  
 388-LysThrGlySerLeuSerArgSerAspArgMetAlaLys-400  
 405-LeuArgIleGluGluGluLeuAlaGlu-413

**Hydrophilic Regions - Hopp-Woods**

11-GluIleLeuAspSerArgGlyAsnProThrValGlu-22  
 43-ThrGlyGlnLysGluAlaLeuGluLeuArgAspGlyAspLysSerArgTyrSerGly-61  
 63-GlyValLeuLysAlaValGlu-69  
 97-LeuAspGlyThrGluAsnLysGlyAsnLeu-106  
 121-AlaAlaAlaGluAspSerGly-127  
 153-GlyGluHisAlaAsn-157  
 173-LysSerPheArgGluAlaLeuArgCysGlyAla-183  
 190-LysLysLeuCysAspSerLysGly-197  
 202-ValGlyAspGluGlyGlyPhe-208  
 213-AsnSerHisLysGluAlaLeu-219  
 247-GluPheTyrLysAspGlyLysTyrHisLeuGluAlaGluGlyArgSerTyrThr-264  
 283-SerIleGluAspGlyMetAspGluAsnAspTrpGluGly-295  
 299-LeuThrGluLysLeuGlyLysValGlnLeuValGly-311  
 321-IleLeuAlaGluGlyIleGluLysGlyVal-330  
 352-AspIleAlaLysCysAsnArg-358  
 364-SerHisArgSerGlyGluThrGluAspSerThrIle-375  
 391-SerLeuSerArgSerAspArgMetAlaLys-400  
 405-LeuArgIleGluGluGluLeuAlaGlu-413  
**g653**

**AMPHI Regions - AMPHI**

60-ThrMetArgLysProArgLeuThr-67  
 75-AlaLeuIlePheThrCysPheAla-82  
 96-ThrAlaLeuAlaAlaIleThrCysIle-104  
 111-LeuGlyLysMetGluGluPheSer-118

**Antigenic Index - Jameson-Wolf**

4-GluProMetArgMetProGlu-10  
 14-GlyPheSerGlySer-18  
 45-GlyCysArgSerThrArgLysThr-52  
 56-ValArgProGluThrMetArgLysProArgLeuThrAsnSerSerAla-71  
 86-AsnSerGlyCysAsnAla-91  
 103-CysIleAsnGlyProProCysArgLeuGlyLysMetGluGlu-116  
 125-SerArgHisLysIleThrProProArgGlyProArgArgVal-138  
 145-ThrLysSerGlnAsnGlyThrGly-152  
 156-SerProProAlaThrSerProAla-163

**Hydrophilic Regions - Hopp-Woods**

4-GluProMetArgMetProGlu-10  
 47-ArgSerThrArgLysThr-52  
 57-ArgProGluThrMetArgLysProArgLeuThrAsn-68  
 107-ProProCysArgLeuGlyLysMetGluGlu-116  
 126-ArgHisLysIleThrProProArgGlyProArg-136  
**g656**

**AMPHI Regions - AMPHI**

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6-GlySerIleSerSerMetIleSerIleAlaArgThrPheGlyAlaProGlu-22  
 42-LysGlnProSerThr-46  
 92-LeuAlaSerLeuAsnLysSerCys-99

**Antigenic Index - Jameson-Wolf**

4-PheSerGlySerIle-8  
 19-GlyAlaProGluSerValProAlaGlyLysValAlaAla-31  
 40-SerPheLysGlnProSerThrLeuGlu-48  
 74-ArgProThrSerLeuArgProLysSerIle-83  
 94-SerLeuAsnLysSerCysSerLeuAlaArgSerSerAlaGlyValLeuProArgArgArgValProAla-116  
 120-ThrMetThrSerSerArgSerArgArgThrArgIleSerGlyGluGluProThrMetTrpLysSerProLys  
 Ser-144

**Hydrophilic Regions - Hopp-Woods**

76-ThrSerLeuArgProLysSer-82  
 99-CysSerLeuAlaArgSerSer-105  
 109-LeuProArgArgArgValProAla-116  
 121-MetThrSerSerArgSerArgArgThrArgIleSerGlyGluGluProThrMet-138  
 140-LysSerProLysSer-144

**g657**

**AMPHI Regions - AMPHI**

20-LeuGlyArgMetPheAla-25  
 65-AspGluLeuAlaLysCysAlaAla-72  
 83-AspAlaMetArgSerLeuAlaLysHisThrAsn-93  
 128-CysLysAlaGluAspIleThrGluAlaSer-137  
 139-GlnPheLeuProGlyIleLeuLysThr-147  
 161-LysThrLeuAspGluLeuLysAlaAla-169  
 178-CysValLeuGluLysMetValAsp-185  
 205-PheAspProAlaGluAsnIle-211  
 232-GlnGlnAlaArgGlnThrAlaGlnArgLeuAlaAspGluLeuAspTyrValGlyValLeu-251

**Antigenic Index - Jameson-Wolf**

37-ValLeuAspProAspProAsnAlaPro-45  
 57-ProPheAspAspArgAlaAlaLeuAspGluLeuAlaLys-69  
 75-ThrGluPheGluAsnValAsnAlaAspAlaMetArgSerLeuAlaLysHisThrAsnValSerProSerGlyA  
 spCysVal-101  
 104-AlaGlnAsnArgIleGlnGluLysAlaTrpIle-114  
 128-CysLysAlaGluAspIleThrGluAla-136  
 150-LeuGlyTyrAspGlyLysGlyGlnIleArgValLysThrLeuAspGluLeuLysAlaAlaPhe-170  
 182-LysMetValAspIleArgGlyGluIle-190  
 196-ArgLeuAsnAspGluAsnValGln-203  
 205-PheAspProAlaGluAsnIleHisGluAsnGly-215  
 230-ValGlnGlnGlnAlaArgGlnThrAlaGlnArgLeuAlaAspGluLeuAsp-246  
 268-GluThrAlaProArgThrHisAsnSerGlyHisHis-279  
 288-GlnPheGlnGlnGln-292  
 300-ProProAlaAspThrLysLeuLeuSer-308  
 319-ValTrpGlnGluAspGlyGlyGluProAspTrp-329  
 332-LeuGlnSerArgProAsnAla-338  
 344-GlyLysLysThrAlaGlnLysGlyArgLysMetGly-355  
 361-ThrThrAspSerAspThrAlaPheGlnGluAlaLysLysLeuHis-375

**Hydrophilic Regions - Hopp-Woods**

37-ValLeuAspProAspProAsnAlaPro-45  
 57-ProPheAspAspArgAlaAlaLeuAspGluLeuAlaLys-69  
 75-ThrGluPheGluAsnValAsn-81

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83-AspAlaMetArgSerLeuAlaLys-90  
 128-CysLysAlaGluAspIleThrGluAla-136  
 152-TyrAspGlyLysGlyGlnIleArgValLysThrLeuAspGluLeuLysAlaAlaPhe-170  
 182-LysMetValAspLeuArgGlyGluIle-190  
 196-ArgLeuAsnAspGluAsnValGln-203  
 206-AspPrcAlaGluAsnIleHis-212  
 230-ValGlnGlnGlnIlaArgGlnThrAlaGlnArgLeuAlaAspGluLeuAsp-246  
 269-ThrAlaProArgThrHisAsn-275  
 301-ProAlaAspThrLysLeu-306  
 320-TrpGlnGluAspGlyGlyGluProAsp-328  
 344-GlyLysLysThrAlaGlnLysGlyArgLysMetGly-355  
 362-ThrAspSerAspThrAlaPheGlnGluAlaLysLysLeuHis-375  
**g658**

**AMPHI Regions - AMPHI**

28-ArgGlnTyrAlaAspIleIleGlnPheValArgGlnAlaLeuArgArgLeuProArgLeuLeuLeu-49  
 68-ValAspValPheGlyGlyValGluGly-76  
 93-AlaGlnValHisHisPhePheGlnAsnAlaIleHisAla-105  
 139-GlnLysLeuArgAlaCysPheSerAsnValPheGly-150  
 155-LeuIleArgGlyLeuGln-161

**Antigenic Index - Jameson-Wolf**

6-ValArgAlaArgGlyGlyPheIleAsp-14  
 21-AlaAspAsnLysHisPhe-26  
 40-AlaLeuArgArgLeuPro-45  
 53-ThrGlnProArgGlyAspAspGlyIleSerGlnAspAlaVal-66  
 86-TyrAspHisGlyAsn-90  
 107-ValPheGlyLysArgGlyPheGluPhe-115  
 130-GlnArgSerArgPheGlnAspAlaGlyGlnLysLeuArgAla-143  
 154-ArgLeuIleArgArgGlyLeuGln-161  
 193-ArgAlaHisArgValGly-198  
 202-PheLysPheGlyArgAsnArgArgAla-210  
 216-GlnLysPheGlyProValValLysArgArgAlaGln-226  
 230-GlyLysPheArgArgArgArgIleArgValGlyIleGluAsnGly-244  
 251-PheSerGlyAsnGlyLysHisSerAla-259

**Hydrophilic Regions - Hopp-Woods**

6-ValArgAlaArgGlyGlyPheIle-13  
 21-AlaAspAsnLysHisPhe-26  
 40-AlaLeuArgArgLeuPro-45  
 53-ThrGlnProArgGlyAspAspGlyIleSer-62  
 130-GlnArgSerArgPheGlnAspAlaGlyGlnLysLeuArgAla-143  
 154-ArgLeuIleArgArgGlyLeu-160  
 193-ArgAlaHisArgValGly-198  
 205-GlyArgAsnArgArgAla-210  
 210-ProValValLysArgArgAlaGln-226  
 230-GlyLysPheArgArgArgArgIleArgValGlyIle-241  
 253-GlyAsnGlyLysHisSerAla-259  
**g661**

**AMPHI Regions - AMPHI**

19-GlyIleAlaAspLysProPheArgArgLeuCysArgAlaPheGlyAla-34  
 48-LeuArgAsnThrGlyLysThrLeu-55  
 76-ProGluGlnMetAlaAsp-81  
 122-AlaAlaIleLeuGluAlaValValLys-130  
 152-PrcAlaValAlaLysIleAlaGlu-159  
 222-HisAspArgAlaArg-226

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237-PheGluAlaLeuCysArg-242  
 246-PheThrAlaCysLeuGluPhe-252

**Antigenic Index - Jameson-Wolf**

20-IleAlaAspLysProPheArgArgLeuCysArg-30  
 45-AspProThrLeuArgAsnThrGlyLysThrLeuHisArgSerAspPheAlaAspGluGlyGly-65  
 72-AlaGlySerAspProGluGlnMetAlaAspAlaAlaArg-84  
 97-AsnMetGlyCysProAlaLysLysValCys-106  
 115-MetGlnAspGluProLeu-120  
 143-GlyTrpHisAspAspAspGlnAsnLeu-151  
 156-LysIleAlaGluAspCysGly-162  
 169-ProArgAlaArgAla-173  
 175-AlaAsnValGlnArgArgGlyAlaLeuArgThrHisArgArgAspGlnLysProSerGluHisProGlyLeu  
 GlyGlnArgArgHisPheAlaAlaLysSerArgArgArgProGlnThrAsnArgArgArgArgHisHisAspA  
 rgAlaArgAlaArgGln-230  
 241-CysArgThrArgArgPhe-246  
 253-GlyArgMetGlnSerArgHisPheGluProHisProArgHisAlaArg-268  
 271-TrpXxxAspArgArgCysAlaHisArgThrGlnThrHisArgLeuValHisArgArgAsnAlaArgArgArg  
 ThrGlyAlaAla-298

**Hydrophilic Regions - Hopp-Woods**

20-IleAlaAspLysProPheArgArgLeuCysArg-30  
 46-ProThrLeuArgAsnThrGlyLysThrLeuHisArgSerAspPheAlaAspGluGlyGly-65  
 73-GlySerAspProGluGlnMetAlaAspAlaAlaArg-84  
 100-CysProAlaLysLysValCys-106  
 115-MetGlnAspGluProLeu-120  
 144-TrpHisAspAspAspGlnAsn-150  
 156-LysIleAlaGluAspCysGly-162  
 169-ProArgAlaArgAla-173  
 175-AlaAsnValGlnArgArgGlyAlaLeuArgThrHisArgArgAspGlnLysProSerGluHisProGlyLeu  
 GlyGlnArgArgHisPhe-205  
 207-AlaLysSerArgArgArgProGlnThrAsnArgArgArgHisHisAspArgAlaArgArgAlaArgGln  
 -230  
 241-CysArgThrArgArgPhe-246  
 253-GlyArgMetGlnSerArgHisPheGluProHisProArgHisAla-267  
 271-TrpXxxAspArgArgCysAlaHisArgThrGlnThr-282  
 285-LeuValHisArgArgAsnAlaArgArgArgThrGlyAla-297

g663

**AMPHI Regions - AMPHI**

19-ProPheAlaLeuLeuHisLysIleAlaGlyLeuIleGlySerLeuAlaTyr-35  
 56-LysGlnHisPheGlyHisMetAlaLysLeu-75  
 86-SerAlaLysCysLeuLysSerLeuValArg-95  
 168-GluGlyLeuArgAlaLeuValLysGlnPheArgLys-179  
 209-ThrIleThrGlyLeuSerArgIleAlaAlaLeuAlaAsn-221  
 243-ProAlaTrpLysSer-247  
 258-GlnArgMetAsnArgPheIleGluGluArgValArgGluHis-271

**Antigenic Index - Jameson-Wolf**

38-ValLysProArgArgArgIleGlyGlu-46  
 54-ProGluTrpAspGluGluLysArgLysThrValLeu-65  
 87-AlaLysCysLeuLysSer-92  
 94-ValArgTyrArgAsnLysHisTyrLeuAsp-103  
 105-AlaLeuAlaAlaGlyGluLys-111  
 139-TyrSerHisGlnLysAsnLysIleLeuAsp-148  
 150-GlnIleLeuLysGlyArgAsnArgTyr-158

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166-ArgThrGluGlyLeuArgAlaLeu-173  
 175-LysGlnPheArgLysSerSerAla-182  
 188-ProAspGlnAspPheGlyArgAsnAsnSer-197  
 229-ProValArgGluAlaAspAspThrVal-237  
 243-ProAlaTrpLysSerPheProSerGluAspAlaGlnAlaAspAlaGlnArgMetAsnArgPheIleGluGlu  
 ArgValArgGluHisProGlu-273  
 280-LysArgPheLysThrArgProGluGlySerProAspPheTyr-293

**Hydrophilic Regions - Hopp-Woods**

39-LysProArgArgArgIleGlyGlu-46  
 54-ProGluTrpAspGluGluLysArgLysThrValLeu-65  
 88-LysCysLeuLysSer-92  
 94-ValArgTyrArgAsn-98  
 105-AlaLeuAlaAlaGlyGluLys-111  
 142-GlnLysAsnLysIleLeuAsp-148  
 150-GlnIleLeuLysGlyArgAsnArgTyr-158  
 166-ArgThrGluGlyLeuArgAlaLeu-173  
 176-GlnPheArgLysSerSer-181  
 190-GlnAspPheGlyArg-194  
 229-ProValArgGluAlaAspAsn-235  
 248-PheProSerGluAspAlaGlnAlaAspAlaGlnArgMetAsnArgPheIleGluGluArgValArgGluHis  
 ProGlu-273  
 280-LysArgPheLysThrArgProGluGlySerPro-290  
**g664**  
**AMPHI Regions - AMPHI**  
 28-AlaHisArgMetGly-32  
 47-AlaAspValLeuAspAlaAlaHisGlyAlaAlaGly-58  
 90-ProValValGluIle-94  
 158-LeuHisArgValPheSerThrIleProArg-167

**Antigenic Index - Jameson-Wolf**

26-AspGlyAlaHisArgMetGlyGlyArgAla-35  
 73-PheLeuGlnArgLysLeuGluPro-80  
 113-AlaValGlyGluAspGluLeuGlyVal-121  
 138-TyrClyAspAspHisGluAsn-144  
 163-SerThrIleProArgGlnSerArgProTrp-172  
 175-ProLeuArgTrpCysLysThrArgPhe-183

**Hydrophilic Regions - Hopp-Woods**

27-GlyAlaHisArgMetGlyGly-33  
 74-LeuGlnArgLysLeuGluPro-80  
 113-AlaValGlyGluAspGluLeuGlyVal-121  
 138-TyrClyAspAspHisGluAsn-144  
 166-ProArgGlnSerArg-170  
**g665-1**

**AMPHI Regions - AMPHI**

6-ArgTyrLeuLysAspTyrGln-12  
 115-GlnCysGluProGluGlyPheArgLysIleThr-125  
 132-AspValMetSerLysPheThrThrThr-140  
 167-ArgHisTrpValLysTrpGluAspProPhe-176  
 225-SerLeuLysAsnAlaMetLys-231  
 286-GlyIleGluSerValVal-291  
 294-GluTyrPheHisAsnTrpThr-300  
 307-ArgAspTrpPheGlnLeuSerLeu-314  
 329-AspArgAlaGlyArgAlaValArgArgileGluAsnIleArgLeuLeuArgGln-346

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358-HisProValArgProValSerTyrGluGluMetAsnAsnPheTyrThr-373  
 380-GlyAlaGluValValArgMetTyrHisThrLeu-390  
 396-PheGlnLysGlyMetLys-401  
 517-GluGlyValThrGluAlaValValProSerLeuLeuArgGlyPheSerAlaProVal-535  
 559-CysTrpGluAlaAla-563  
 575-LeuAlaAlaLeuSerAspGlyIle-582  
 589-LysLeuLeuAlaAlaValGlu-595  
 603-LeuAspAsnAlaPheLysAlaLeu-610  
 622-AspGlyThrGluAsnIleAspProLeu-630  
 642-ThrLeuAlaValArg-646  
 648-LeuProLysTrpHisGluLeuAspArg-656  
 674-AspTrpArgThrLeuLysAsnValCysArgAla-684  
 696-ThrValAlaGluLysTyrGlyGluMetAlaGlnAsnMet-708  
 712-TrpGlyIleLeuSer-716  
 730-LeuAlaGlnPheAlaAspLysPheSer-738  
 758-AspThrLeuGlnGlnValGlnThrAla-766  
 782-SerLeuIleGlySerPheSerArgAsnVal-791  
 822-ArgLeuValGlnAlaPheAsnLeuCysAsnLysLeu-833

**Antigenic Index - Jameson-Wolf**

1-MetSerLysThrValArgTyrLeuLysAspTyrGlnThrProAla-15  
 32-ThrValValLysSerArgLeuThrValGluProGlnArgAlaGlyGlu-47  
 49-LeuValLeuAspGlySerAla-55  
 79-AlaAspValProSerGluArgPheThrVal-88  
 90-ValGluThrGluIleLeuProAlaGluAsnLysSerLeu-102  
 115-GlnCysGluProGluGlyPheArgLys-123  
 128-IleAspArgProAspValMetSer-135  
 142-ValAlaAspLysIleArgTyrPro-149  
 153-SerAsnGlyAsnIleAspGlyGlyGluPheSerAspGlyArgHisTrpValLysTrpGluAspProPhe  
 AlaLysProSer-180  
 191-AlaValThrGluAspArgPheThrThrMetSerGlyArgAsnValLysIle-207  
 211-ThrThrGluAlaAspLysProLysVal-219  
 230-MetLysTrpAspGluThrArgPhe-237  
 255-AsnMetGlyAlaMetGluAsnLysGlyLeu-264  
 275-AspSerArgThrAlaThrAspThrAspPheGluGlyIleGlu-288  
 295-TyrPheHisAsnTrpThrGlyAsnArgValThrCysArgAspTrp-309  
 313-SerLeuLysGluGly-317  
 322-ArgAspGlnGluPheSerGlyAspArgAlaGlyArgAlaValArgArgIleGluAsn-340  
 342-ArgLeuLeuArgGlnAsnGlnPheProGluAspAlaGlyProThrAlaHisProValArgProValSerTyr  
 GluGluMetAsn-369  
 376-ValTyrGluLysGlyAlaGluVal-383  
 394-GluGlyPheGlnLysGlyMet-400  
 404-PheGlnArgHisAspGlyGlnAlaValThrCysAspAspPheArgAlaAlaMet-421  
 437-SerGlnAlaGlyThrPro-442  
 444-LeuGluAlaGluGlyArgLeuLysAsnAsnVal-454  
 459-IleLysGlnThrValProProThrProAspMetAlaAspLysGlnPro-474  
 483-LeuLeuAsnArgAsnGlyGluAlaVal-491  
 494-AspTyrGlnGlyLysArgAlaThrGlu-502  
 508-ThrGluAlaGluGln-512

538-AsnTyrProTyrSerAspAspAspLeu-546  
 552-HisAspSerAspAla-556  
 578-LeuSerAspGlyIleGlyLeuProLysHisGluLysLeu-590  
 594-ValGluLysValIleSerAspAspLeuLeu-603

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614-ValProSerGluAlaGluLeuTrpAspGlyThrGluAsnIleAspProLeuArg-631  
 633-HisGlnAlaArgGluAlaLeu-639  
 652-HisGluLeuAspArgGlnAlaAlaLysGlnGluAsnGlnSerTyrGluTyrSerProGluThrAlaAsp-67  
 4  
 676-ArgThrLeuArgAsnValCys-682  
 689-AlaAspProAlaHis-693  
 696-ThrValAlaGluIysTyrGlyGlu-703  
 718-ValAsnGlyAsnGluSerAspThrArgAsnCys-728  
 733-PheAlaAspLysPheSerAspAspAlaLeuVal-743  
 752-GlySerSerArgArgSerAspThrLeuGln-761  
 768-GlnHisProLysPheSerLeuGluAsnProAsnLysAlaArgSer-782  
 785-GlySerPheSerArgAsnValPro-792  
 796-AlaGlnAspGlySerGlyTyrArgPheIleAla-806  
 808-LysValIleGluIleAspArgPheAsnProGlnVal-819  
 831-AsnLysLeuGluProHisArgLysAsnLeuValLysGlnGluLeuGlnCys-847  
 849-ArgAlaGlnGluGlyLeuSerLysAspValGlyGluIleVal-862

**Hydrophilic Regions - Hopp-Woods**

1-MetSerLysThrValArgTyrLeuLys-9  
 32-ThrValValLysSerArgLeuThrValGluProGlnArgAlaGlyGlu-47  
 81-ValProSerGluArgPheThrVal-88  
 90-ValGluThrGluIleLeuProAlaGluAsnLysSer-101  
 116-CysGluProGluGlyPheArg-122  
 129-AspPheProAspValMetSer-135  
 142-ValAlaAspLysLysArgTyr-148  
 154-AsnGlyAsnLysIleAspGlyGlyGluPheSerAsp-165  
 170-ValLysTrpGluAspProPheAla-177  
 191-AlaValThrGluAspArgPheThr-198  
 201-SerGlyArgAsnValLys-206  
 213-GluAlaAspLysProLysVal-219  
 230-MetLysTrpAspGluThrArgPhe-237  
 258-AlaMetGluAsnLysGly-263  
 275-AspSerArgThrAlaThrAspThrAspPheGluGlyIleGlu-288  
 313-SerLeuLysGluGly-317  
 322-ArgAspGlnGlyPheSerGlyAspArgAlaGlyArgAlaValArgArgIleGluAsn-340  
 348-GlnPheProGluAspAlaGlyPro-355  
 363-ValSerTyrGluGluMetAsn-369  
 376-ValTyrGluLysGlyAlaGluVal-383  
 394-GluGlyPheGlnLysGlyMet-400  
 406-ArgHisAspGlyGln-410  
 413-ThrCysAspAspPheArgAlaAlaMet-421  
 444-LeuGluAlaGluGlyArgLeuLysAsnAsnVal-454  
 467-ProAspMetAlaAspLysGlnPro-474  
 495-TyrGlnGlyLysArgAlaThrGlu-502  
 508-ThrGluAlaGluGln-512  
 541-TyrSerAspAspAspLeu-546  
 552-HisAspSerAspAla-556  
 585-ProLysHisGluIysLeu-590  
 594-ValGluLysValIleSer-599  
 616-SerGluAlaGluIle-620  
 622-AspGlyThrGluAsnIleAspPro-629  
 633-HisGlnAlaArgGluAlaLeu-639  
 652-HisGluLeuAspArgGlnAlaAlaLysGlnGluAsnGlnSer-665  
 668-TyrSerProGluThrAlaAsp-674  
 689-AlaAspProAlaHis-693

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696-ThrValAlaGluLysTyrGlyGlu-703  
 719-AsnGlyAsnGluSerAspThrArgAsn-727  
 733-PheAlaAspLysPheSerAspAspAlaLeuVal-743  
 753-SerSerArgArgSerAspThrLeu-760  
 776-AsnProAsnLysAlaArgSer-782  
 797-GlnAspGlySerGly-801  
 808-LysValIleGluIleAspArgPheAsn-816  
 831-AsnLysLeuGluProHisArgLysAsnLeuValLysGlnGluLeuGlnCys-847  
 849-ArgAlaGlnGluGlyLeuSerLysAspValGlyGluIleVal-862  
**g666**

**AMPHI Regions - AMPHI**  
 24-AlaLeuIleMetSerMetVal-30  
 57-HisThrProGluHisValThrGly-64  
 89-GlyTyrAspIleLeuLysGlnGlyGlySer-98  
 162-LeuLysPheMetGluAlaValVal-169

**Antigenic Index - Jameson-Wolf**  
 6-TyrGlnSerAsnSerGlyGluGlyValLeu-15  
 40-AsnGlnGlyLysValAsnThr-46  
 55-AspAlaHisThrProGluHis-61  
 63-ThrGlyLeuThrGluGlnLysGln-70  
 80-SerAlaAsnProLeuAla-85  
 92-IleLeuLysGlnGlyGlySerAlaAla-100  
 114-GluProGlnSerSerGlyLeuGlyGly-122  
 130-AspAsnThrAlaLysThr-135  
 137-ThrThrPheAspGlyArgGluThrAlaPro-146  
 154-PheLeuAspLysAspGlyXxxProLeuLys-163

**Hydrophilic Regions - Hopp-Woods**  
 40-AsnGlnGlyLysValAsnThr-46  
 66-ThrGluGlnLysGln-70  
 96-GlyGlySerAlaAla-100  
 139-PheAspGlyArgGluThrAlaPro-146  
 154-PheLeuAspLysAspGlyXxxPro-161  
**g667**  
**AMPHI Regions - AMPHI**  
 46-PheAlaIleIleAlaAsp-51  
 56-AlaArgValGluArgPheProHisPheAlaAla-66  
 71-LeuAlaArgLysAlaAlaGlnPhe-78  
 115-IleAlaAlaValAlaGluIle-121  
 153-AlaAspGlnLeuArgArgMetPheAsnGlnPheGluLysLeuGlyAsnHisAsp-171  
 202-GluValValLeuHisLysIleAlaAlaGlyLeu-212

**Antigenic Index - Jameson-Wolf**  
 7-LeuGlyGlyGluIleValSerAspProCysAspPhe-18  
 25-ValGluSerAlaAlaAspGlnThrGluThrGln-35  
 56-AlaArgValGluArg-60  
 71-LeuAlaArgLysAlaAlaGln-77  
 84-ArgHisIleArgProArgLeuValLysArgGluGlnIle-96  
 152-ProAlaAspGlnLeuArg-157  
 165-GluLysLeuGlyAsnHisAspPhe-172  
 192-HisThrAlaGlyAsnArgHisAsnLeu-200  
 225-ValIleArgGlnGlyArgArgGlnValIleGlnArgThrAspThrLeu-240  
 248-IleGluSerGlnAsnArgIleHisGlySerThrLeuHisSerLysThrAspLeu-265

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**Hydrophilic Regions - Hopp-Woods**

11-IleValSerAspProCysAsp-17  
 25-ValGluSerAlaAlaAspGlnThrGluThrGln-35  
 56-AlaArgValGluArg-60  
 71-LeuAlaArgLysAlaAlaGln-77  
 84-ArgHisIleArgProArgLeuValLysArgGluGlnIle-96  
 165-GluLysLeuGlyAsn-169  
 227-ArgGlnGlyArgArgGlnValIleGlnArgThrAspThr-239  
 250-SerGlnAsnArgIleHis-255  
 259-LeuHisSerLysThrAspLeu-265  
**g669**

**AMPHI Regions - AMPHI**

24-LysLeuHisArgAlaPhe-29  
 59-GlnIlePheArgHisValGlnSer-66  
 79-LysProProAsnThrAla-84

**Antigenic Index - Jameson-Wolf**

1-MetArgArgIleValLysLysHisGlnProValAsnAla-13  
 33-GlyArgLysArgProHisHisAspArgSerLeuArgArgGlnHisGlyIleGluGlyMetGlyPhe-55  
 64-ValGlnSerSerAsnArgGlnSerGlyArgGlnProValCysThrLysProProAsnThrAlaSer-85  
 100-AlaAspIleLysArgIleLeu-106

**Hydrophilic Regions - Hopp-Woods**

1-MetArgArgIleValLysLysHisGlnPro-10  
 33-GlyArgLysArgProHisHisAspArgSerLeuArgArgGlnHisGly-49  
 65-GlnSerSerAsnArgGlnSerGlyArgGlnProValCysThrLysProProAsn-82  
 100-AlaAspIleLysArgIleLeu-106  
**g670**

**AMPHI Regions - AMPHI**

10-ArgSerCysPheGly-14  
 16-ValLysAsnAlaSerGlyValSer-23  
 34-IleThrArgSerAla-38  
 126-PheSerAlaCysSerAlaPheCysProLeu-135

**Antigenic Index - Jameson-Wolf**

4-CysArgAsnCysLeuAlaArgSerCys-12  
 18-AsnAlaSerGlyValSerSerArgIleCysProLeuSer-31  
 33-LysIleThrArgSerAlaThrSerArgAlaAsnProIle-45  
 65-AsnThrSerProThrIleSerGlySerSerAlaGluValGlySerSerAsnSerIleThrArgGlySerIleA  
 laSerProArgAlaIleAla-95  
 100-TrpProProGluSerTrpGluGlyLysAla-109  
 114-AlaSerProThrArgSerLysSerSer-122  
 128-AlaCysSerAlaPhe-132  
 146-AsnThrValArgCysGly-151

**Hydrophilic Regions - Hopp-Woods**

33-LysIleThrArgSerAlaThrSerArgAlaAsn-43  
 73-SerSerAlaGluValGlySer-79  
 116-ProThrArgSerLysSer-121  
**g671**  
**AMPHI Regions - AMPHI**  
 11-PheAsnAlaProAsn-15  
 72-LysGlyAlaAlaLys-76  
 119-ArgLeuPheIleArgTyr-124

**Antigenic Index - Jameson-Wolf**

9-ThrProPheAsnAlaProAsnThrProProLysMetArgLeuAlaLysProArgProThrAlaGluThrAlaProValSerSerGluArg-38  
 45-GlnAlaMetThrAsnArgGluMetAsnAspArgAlaAsnAlaAsnArgArgGlyTrpAsnGluAlaLysAlaArgSerAlaLysGlyAlaAla-75  
 77-SerLeuAlaLysLysLysGluThrThr-85  
 110-AlaGluAlaArgArgSerAlaMet-117

**Hydrophilic Regions - Hopp-Woods**

16-ThrProProLysMetArgLeuAlaLysProArgProThrAlaGlu-30  
 32-AlaProValSerSerGluArg-38  
 47-MetThrAsnArgGluMetAsnAspArgAlaAsnAlaAsnArgArgGlyTrpAsnGluAlaLysAlaArgSerAlaLysGlyAlaAla-75  
 77-SerLeuAlaLysLysLysGluThrThr-85  
 110-AlaGluAlaArgArgSerAlaMet-117  
 g672

**AMPHI Regions - AMPHI**

38-ArgAlaLeAspIleIleLysAlaGlnLys-47  
 50-AlaAlaLeuProProPheValSerValVal-59  
 67-AlaGlnAsnIleArgArgIleLeuAlaGluValPro-78  
 91-AlaPheCysArgGlnPheAspArgProTyr-100  
 105-ArgValGlnThrAlaSerAspIle-112  
 115-AlaAlaThrArgPheProAsn-121  
 131-HisProSerGluTyrGly-136  
 163-ProGluAsnValGlyGluAlaValValArg-171  
 173-ThrGlyAlaGluAla-177

**Antigenic Index - Jameson-Wolf**

1-MetArgLysIleArgThrLysIleCysGlyIleThrThrProGluAspAlaLeu-18  
 34-ProGlnSerProArgAlaIleAspIleIleLysAlaGlnLys-47  
 65-GluSerAlaGlnAsnIleArgArgIleLeuAla-75  
 84-PheHisGlyAspGluAspAspAlaPhe-92  
 95-GlnPheAspArgProTyrIle-101  
 107-GlnThrAlaSerAspIleArgAsnAlaAla-116  
 130-TyrHisProSerGluTyrGlyGlyThrGlyHisArgPheAsp-143  
 149-GluTyrSerGlyLysPro-154  
 159-GlyGlyLeuThrProGluAsnValGlyGluAlaValArg-171  
 176-GluAlaValAspValSerGlyGlyValGluAlaSerLysGlyLysAspProAlaLys-195  
 202-ThrAlaAsnArgLeuSerArg-208

**Hydrophilic Regions - Hopp-Woods**

1-MetArgLysIleArgThrLysIle-8  
 13-ThrProGluAspAlaLeu-18  
 36-SerProArgAlaIleAsp-41  
 43-IleLysAlaGlnLys-47  
 66-SerAlaGlnAsnIleArgArgIleLeuAla-75  
 85-HisGlyAspGluAspAspAlaPhe-92  
 110-SerAspIleArgAsnAlaAla-116  
 165-AsnValGlyGluAlaValValArg-171  
 184-ValGluAlaSerLysGlyLysLysAspProAlaLys-195  
 204-AsnArgLeuSerArg-208  
 g673

**AMPHI Regions - AMPHI**

84-LeuAsnAspArgLeuAsnGlnAsnValThrGluAlaLeuGlyGlyValAspVal-101  
 110-ArgLeuThrAspAla-114

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117-ValValLeuLysGlnLeuProLys-124  
 172-ArgIleAlaAsnLeuLeuGluLeuLeuLysProTyrLeu-184  
 212-LysLeuPheArgTyrLeuGlyGluGlu-220  
 232-PheGluGluGlyAspGly-237  
 261-GlyLylGlyArgLeuLysLysIleSerThr-269  
 286-LysValTrpValLysValLys-292

**Antigenic Index - Jameson-Wolf**

7-LeuAlaGlyGluArgAlaAlaGlyGlyTyrArg-17  
 24-ValGlyArgProAsnValGlyLysSerThr-33  
 44-SerIleThrSerLysAlaGlnThrThrArgAsnArgValThr-58  
 61-TyrThrAspAspThrAla-66  
 73-ThrProGlyPheGlnThrAspHisArgAsnAlaLeuAsnAspArgLeuAsnGlnAsnValThrGlu-94  
 109-MetArgLeuThrAlaAspArgValVal-118  
 121-GlnLeuProLysHisThr-126  
 134-LysIleAspLysAspLysAlaLysAspArgTyrAla-145  
 153-ValArgAlaGluPhe-157  
 180-LeuLysProTyrLeuProGluSerVal-188  
 190-MetTyrProGluAspMetValThrAspLysSerAlaArg-202  
 208-IleValArgGluLysLeuPhe-214  
 217-LeuGlyGluGluLeuPro-222  
 227-ValGluValGluGlnPheGluGluGlyAspGlyLeuAsn-239  
 247-ValAspLysGluSerGlnLys-253  
 258-GlyLysGlyGluArgLeuLysLysIleSerThrGluAlaArgLeuAspMetGluLysLeuPheAspAsn  
 LysVal-283  
 291-ValLysSerGlyTrpAlaAspAspIleArgPheLeuArg-303

**Hydrophilic Regions - Hopp-Woods**

7-LeuAlaGlyGluArgAlaAlaGly-14  
 45-IleThrSerLysAlaGlnThrThrArgAsnArgVal-57  
 61-TyrThrAspAspThrAla-66  
 78-ThrAspHisArgAsnAlaLeuAsnAspArgLeuAsn-89  
 109-MetArgLeuThrAspAlaAspArgValVal-118  
 134-LysIleAspLysAspLysAlaLysAspArgTyrAla-145  
 153-ValArgAlaGluPhe-157  
 194-AspMetValThrAspLysSerAlaArg-202  
 208-IleValArgGluLysLeuPhe-214  
 217-LeuGlyGluGluLeuPro-222  
 227-ValGluValGluGlnPheGluGluGlyAspGlyLeuAsn-239  
 247-ValAspLysGluSerGlnLys-253  
 259-LysGlyGlyGluArgLeuLysLysIleSerThrGluAlaArgLeuAspMetGluLysLeuPheAsp-280  
 293-SerGlyTrpAlaAspAspIleArgPheLeuArg-303  
 g674

**AMPHI Regions - AMPHI**

16-ValTyrGlnSerLeuIle-21  
 24-ThrAlaAlaProGluIleAlaLysAsnIleArgGluMetSerAspPheAlaLysAlaAspGluGluLeu-46  
 58-AlaAlaAspTyrIleGlnLysIleArg-66  
 86-ThrAlaCysHisGluLeuSerAlaMetProGluThr-97  
 107-IleGluValThrLysThrPheGlyGlyThrAspGlyHisLysPheValAsnGlyIleLeuAspLysLeuAla  
 -130

**Antigenic Index - Jameson-Wolf**

1-MetLysThraAlaArgArgArgSerArgGluLeuAla-12  
 28-GluIleAlaLysAsnIleArgGluMetSerAspPheAlaLysAlaAspGluGluLeuPhe-47  
 54-ThrGlnThrAsnAla-58

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61-TyrIleGlnLysIleArgProLeuLeuAspArgAspGluLysAspLeuAsnProIleGluArg-81  
 93-AlaMetProGluThrProTyr-99  
 105-GluAlaIleGluValThrLysThrPheGlyGlyThrAspGlyHisLysPhe-121  
 129-LeuAlaAlaGlnIleArgProAspGluProLysArgArg-141

**Hydrophilic Regions - Hopp-Woods**

1-MetLysThrAlaArgArgSerArgGluLeuAla-12  
 28-GluIleAlaLysAsnIleArgGluMetSerAspPheAlaLysAlaAspGluGluLeuPhe-47  
 63-GlnLysIleArgProLeuLeuAspArgAspGluLysAspLeuAsnProIleGluArg-81  
 105-GluAlaIleGluVal-109  
 133-IleArgProAspGluProLysArgArg-141  
**g675**

**AMPHI Regions - AMPHI**

21-ArgPheThrAsnGluIleGlySerGlnMetLeuLysValCysCysArgThrLeuGlnGluLeuGly-42  
 74-AlaLeuIleAlaIle-78  
 123-GlnAlaIleGluArgIleGlyGluLysAlaSerAsp-134  
 141-GluCysAlaAsnLeuValAsnLeuLeuLeuGlu-151

**Antigenic Index - Jameson-Wolf**

6-ProAsnLeuAspGlyLysHisLeuArg-14  
 42-GlyValAlaAspGluAsnIle-48  
 68-SerSerGluLysPheAsp-73  
 82-IleArgGlyGluThrTyr-87  
 93-AlaAsnGluSerGlyAlaGlyIle-100  
 118-ThrGluAsnAspAlaGlnAlaIleGluArgIleGlyGluLysAlaSerAspAlaAlaLysValAlaVal-14  
 0  
 152-GluGlnPheGluAspGluGlu-158

**Hydrophilic Regions - Hopp-Woods**

8-LeuAspGlyLysHisLeuArg-14  
 42-GlyValAlaAspGluAsnIle-48  
 68-SerSerGluLysPheAsp-73  
 82-IleArgGlyGluThrTyr-87  
 95-GluSerGlyAlaGly-99  
 118-ThrGluAsnAspAlaGlnAlaIleGluArgIleGlyGluLysAlaSerAspAlaAlaLysValAlaVal-14  
 0  
 152-GluGlnPheGluAspGluGlu-158  
**g677**

**AMPHI Regions - AMPHI**

19-ThrValArgLeuCysArgPheArgArg-27  
 45-LeuThrAlaPheArgValGlnAsnHisPheValAlaPheAlaArgPheAsnGlnAlaThrArgGlnArgA  
 rg-69  
 79-IleAspPheIleAspAlaAsp-85  
 87-PheAspGlyLeuLeuAla-92  
 155-CysArgProValAspAspLeuAspAsp-163  
 166-AlaPhePheIleAspGlnLeuIleLysLeuValPheGlnCys-179

**Antigenic Index - Jameson-Wolf**

23-CysArgPheArgArgHisSerArgSerValAsp-33  
 35-AspValPheAspArgLysAspPheAsnAsp-44  
 63-GlnAlaThrArgGlnArgArgAsnProArgAsnPheVal-75  
 82-IleAspAlaAspAspPheAspGly-89  
 97-GlnGlnThrAspGlyArgAlaGluLys-105  
 115-GlyIleAspAspAspGlySerLeu-122  
 125-PheGlyGlnGluThrAspAlaAlaVal-133

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156-ArgProValAspAspLeuAspAspPheGly-165  
 181-ProSerGlyGlyArgAsn-186

**Hydrophilic Regions - Hopp-Woods**

23-CysArgPheArgArgHisSerArgSerValAsp-33  
 35-AspValPheAspArgLysAspPhe-42  
 63-GlnAlaThrArgGlnArgArgAsnProArg-72  
 82-IleAspAlaAspAspPheAsp-88  
 97-GlnGlnThrAspGlyArgAlaGluLys-105  
 115-GlyIleAspAspAspGlySer-121  
 126-GlyGlnGluThrAspAlaAlaVal-133  
 156-ArgProValAspAspLeuAspAsp-163

**g678**

**AMPHI Regions - AMPHI**  
 24-MetArgGlyValIle-28  
 47-PheAlaAlaProPhe-51  
 80-IleGlnLysMetLeuArgSerLeuLeuThrGlyAla-91  
 102-ArgIleLeuGlyGlyValPheGlyAlaLeu-111  
 130-ProAspThrGluGlu-134

**Antigenic Index - Jameson-Wolf**

125-SerLysThrAspLeuProAspThrGluGluTrpGlnGlnSerTyr-139  
 153-AsnHisThrAspAsnAlaProGluSerLeuAspAspAsp-165

**Hydrophilic Regions - Hopp-Woods**

125-SerLysThrAspLeuProAspThrGluGluTrpGln-136  
 155-ThrAspAsnAlaProGluSerLeuAspAspAsp-165

**g681**

**AMPHI Regions - AMPHI**  
 12-PheSerGluGluAlaLysPheIleSerAlaMet-22  
 110-CysAlaValPheGlyLysLeuProArg-118  
 123-LeuGlyLysGlnCysGly-128  
 137-ValGlyGluAlaAspAspAla-143  
 146-ValGlyValValGlyValPheVal-153  
 202-LysCysValHisCysGlyAsnThr-209  
 212-GlyGlyLysLeuAlaAspPheThrThrIleProAla-223  
 235-CysAlaProPheAlaAlaLeuArgCysPheCysIlePheGlyValTrpLysArgIleArgAlaValPheCys  
 GlyArg-260

**Antigenic Index - Jameson-Wolf**

11-AsnPheSerGluGluAlaLysPhe-18  
 39-AlaThrProAsnSerTrpArgValArgGlnGln-49  
 59-LeuValLysArgAlaCys-64  
 67-ProMetArgArgCysLeuProSerArgLeu-76  
 91-SerGluCysArgLeuLys-96  
 122-GlyLeuGlyLysGlnCysGlyGlyPhe-130  
 134-PheGlyAspValGlyGluAlaAspAspAlaGluVal-145  
 157-AlaAlaGluGluThrPro-162  
 173-AlaValLysGluAlaAspGly-179  
 185-AspGlyValGlyGlyAspAlaAlaValGluCysArgGlyLysCysLeuCys-201  
 209-ThrLeuGlyGlyLysLeuAlaAsp-217  
 224-LeuSerAlaAspGlyGlyGly-230  
 257-PheCysGlyArgArg-261

**Hydrophilic Regions - Hopp-Woods**

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11-AsnPheSerGluGluAlaLysPhe-18  
 44-TrpArgValArgGln-48  
 59-LeuValLysArgAlaCys-64  
 67-ProMetArgArgCysLeuPro-73  
 91-SerGluCysArgLeuLys-96  
 136-AspValGlyGluAlaAspAspAlaGluVal-145  
 157-AlaAlaGluGluThrPro-162  
 173-AlaValLysGluAlaAspGly-179  
 191-AlaAlaValGluCysArgGlyLysCysLeu-200  
 257-PheCysGlyArgArg-261

**g682****AMPHI Regions - AMPHI**

33-ArgLeuArgLysCysGlyArgIleLeuSerGlyIleCysGluProPhe-48  
 75-IleLysMetProSerGluPro-81  
 91-AlaGlyPhelleArgPhePro-97

**Antigenic Index - Jameson-Wolf**

9-ProTyrGlyGluArgArgLysAsnTrpAsp-18  
 29-LeuSerProThrArgLeuArgLysCysGlyArg-39  
 70-CysValAsnAspGluIleLysMetProSerGluProAspTrp-83  
 95-ArgPheProThrAspArgProIleLeu-103  
 112-IleSerProArgThrGlyPheArgTyrProThrArgSerLeuProLysSerLysAlaTyrGly-133

**Hydrophilic Regions - Hopp-Woods**

11-GlyGluArgArgLysAsnTrpAsp-18  
 30-SerProThrArgLeuArgLysCysGlyArg-39  
 72-AsnAspGluIleLysMetProSerGluProAspTrp-83  
 97-ProThrAspArgProIleLeu-103  
 124-SerLeuProLysSerLysLysAlaTyrGly-133

**g683****AMPHI Regions - AMPHI**

26-ThrProAspLysSerAlaArgTrpGluAsnIleGlyThrIleSerAsn-41  
 75-ArgPheAlaAsnThrPro-80  
 101-SerSerLeuGlnIlePhe-106  
 124-ArgProMetSerIleLeuSerGly-131

**Antigenic Index - Jameson-Wolf**

24-CysSerThrProAspLysSerAlaArgTrpGluAsn-35  
 37-GlyThrIleSerAsnGly-42  
 48-IleAsnLysAspSerValArgLysAsnGlyAsn-58  
 63-GlnAspLysLysValValThrAsnLeuLysGlnGluArgPheAlaAsnThrProAlaTyr-82  
 93-CysAsnAsnLysThrTyrArgLeu-100  
 106-PheAspThrLysAsnThrGluIleSerThrGlnAsnTyrThrAlaSerSerLeuArgPro-125  
 131-GlyThrLeuThrGluLysGlnTyrGlu-139  
 141-ValCysGlyLysLysLeu-146

**Hydrophilic Regions - Hopp-Woods**

25-SerThrProAspLysSerAlaArgTrpGluAsn-35  
 48-IleAsnLysAspSerValArgLysAsnGly-57  
 63-GlnAspLysLysValValThr-69  
 71-LeuLysGlnGluArgPheAla-77  
 107-AspThrLysAsnThrGluIleSer-114  
 133-LeuThrGluLysGlnTyrGlu-139  
 141-ValCysGlyLysLysLeu-146

**g684**

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**AMPHI Regions - AMPHI**

13-AlaAlaCysGlyThrValGln-19  
 47-LeuAlaGluProLeu-51  
 73-TrpAlaAspThrLeuAspAspMetLeuGluAlaAlaLeuSerAsnAlaPheAsnArgLeuAspSerThrArg-96  
 110-TrpThrValTyrIleAspAlaPheGlnGlySerTyr-121  
 154-AlaMetThrAlaAlaLeuGluGlnGlyLeuLysGlnAlaAlaGlnGlnMetVal-171

**Antigenic Index - Jameson-Wolf**

26-LeuProAspSerArgTyrIleArgProAlaThrGlnGlyGluThrAlaValGluValArgLeuAlaGluProLeuLysArgGlyGlyLeu-56  
 60-ThrAspProTyrArgIleAsnThrAlaGln-69  
 76-ThrLeuAspAspMetLeuGlu-82  
 90-AsnArgLeuAspSerThrArgThrPhe-98  
 101-AlaSerArgSerGlySerThrAspLys-109  
 117-PheGlnGlySerTyrThrGlyLysThrLeu-126  
 133-LeuProAspGlyThrAsnArgProPheHisIleGluThrGluGlnGlyAspGlyTyrAla-153  
 161-GlnGlyLeuLysGlnAlaAla-167

**Hydrophilic Regions - Hopp-Woods**

27-ProAspSerArgTyrIleArg-33  
 35-AlaThrGlnGlyGlyGluThrAlaValGluValArgLeuAlaGluProLeuLysArgGlyGly-55  
 76-ThrLeuAspAspMetLeuGlu-82  
 90-AsnArgLeuAspSerThrArg-96  
 102-SerArgSerGlySerThrAspLys-109  
 141-PheHisIleGluThrGluGlnGlnGlyAsp-150  
 161-GlnGlyLeuLysGlnAlaAla-167

**g685****AMPHI Regions - AMPHI**

7-AsnPheAlaPheCysGlyValVal-14  
 44-CysAlaValLeuPro-48  
 61-ValSerAlaAlaSerGln-66  
 98-TrpAlaAlaLeuAspThrLeuThrGluPro-107  
 141-CysGluSerLeuHisArgHis-147  
 158-GlyAlaGluIleTyrGluGlnLeuAlaLysAsn-168  
 186-GluLysGlnMetGluThrLeuSerArgIlePheGly-197  
 300-AlaValGluValLeu-304  
 340-AlaAlaGluGlnLeuLysAlaAla-347

**Antigenic Index - Jameson-Wolf**

20-LeuAsnAsnLysHisSerTyrSerTyrAlaLysGluProHisThrValLysProArgPhe-39  
 51-CysSerProGluProAlaAlaGluLysThrValSer-62  
 78-ProThrAlaArgGlyAspAlaValProLysAsnProGluArgValAla-94  
 103-ThrLeuThrGluProGlyVal-109  
 126-AlaPheAspLysAlaAla-131  
 137-PheGluProAspCysGluSerLeuHisArgHisAsnPro-149  
 155-GlyGlyProGlyAlaGluAlaTyrGluGlnLeuAlaLysAsnAlaThr-170  
 174-LeuThrValAspAsnGlyAsnIleArgThrSerGlyGluLysGlnMetGluThrLeu-192  
 195-IlePheGlyLysGluAlaArgValAlaGlu-204  
 213-PheAlaGlnLysArgGluAlaAlaLysGlyArgGlyLeu-227  
 231-ValThrGlyAsnLysValSerAlaPheGlyThrGlnSerArgLeu-245  
 251-GlyAspIleGlyLeuProProValAspGluSerLeuArgAsnGluGlyHisGlyGln-269  
 275-TyrIleLysGluLysAsnProGlyTrp-283  
 289-ArgThrAlaAlaIleGlyGlnGluGlyProAla-299  
 313-AsnAlaTrpLysArgLysGln-319

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342-GluGlnLeuLysAlaAlaPheGluLysAlaGluProValAla-355

**Hydrophilic Regions - Hopp-Woods**

28-TyrAlaLysGluProHisThrValLys-36  
 51-CysSerProGluProAlaAlaGluLysThrValSer-62  
 79-ThrAlaArgGlyAspAlaValVal-86  
 88-LysAsnProGluArgValAla-94  
 126-AlaPheAspLysAlaAla-131  
 137-PheGluProAspCysGluSerLeuHisArgHis-147  
 160-GluAlaTyrGluGlnLeuAlaLys-167  
 179-GlyAsnIleArgThrSerGlyGluLysGlnMetGluThrLeu-192  
 195-IlePheGlyLysGluAlaArgValAlaGlu-204  
 213-PheAlaGlnLysArgGluAlaAlaLysGlyLysGlyArgGly-226  
 257-ProValAspGluSerLeuArgAsnGluGlyHisGly-268  
 275-TyrIleLysAsnPro-281  
 294-GlyGlnGluGlyProAla-299  
 314-AlaTrpLysArgLysGln-319  
 342-GluGlnLeuLysAlaAlaPheGluLysAlaGluProValAla-355

**g686**

**AMPHI Regions - AMPHI**

10-AspValPheAspAspIleCysSerAlaValGluGlyPheGlyGlyIleAlaArgSerValGlnLeu-31  
 50-SerAlaGlyIleValGluThrValGlyLysProLeu-61  
 70-ValGluAlaAspIle-74  
 86-IleProArgAlaPheGlySerGlyIleAlaAlaLeu-98

**Antigenic Index - Jameson-Wolf**

1-TerTerAsnPheSerCysArgAlaAspAspValPheAsp-13  
 46-LeuArgGlnHisSerAlaGlyIle-53  
 56-ThrValGlyLysProLeuSerGlyAla-64  
 70-ValGluAlaAspIle-74  
 115-AspAlaValLysAlaGluSerValAsnGlyThrThrGly-127

**Hydrophilic Regions - Hopp-Woods**

6-CysArgAlaAspAspValPheAsp-13  
 70-ValGluAlaAspIle-74  
 115-AspAlaValLysAlaGluSerValAsn-123

**g687**

**AMPHI Regions - AMPHI**

13-AlaAlaLeuPheAlaLeu-18  
 66-LysValGluValLeuGluPhePheGlyTyrPheCysPro-78  
 80-CysAlaArgLeuGluPro-85  
 87-LeuSerLysHisAlaLysSerPhe-94  
 114-LeuAlaArgLeuAlaAlaAla-120  
 137-PheAspAlaMetVal-141  
 150-ProGluValLeuLysTrpLeu-157  
 174-SerProGluSerGln-178  
 182-GlyLysMetGlnGluLeuThrGluThrPhe-191

**Antigenic Index - Jameson-Wolf**

1-MetLysSerArgHis-5  
 21-CysAspSerLysValGlnThrSerValProAlaAspSerAlaPro-35  
 45-GlyLeuValGluGlyGlnAsnTyr-52  
 58-ProIleProGlnGlnAlaGlyLysValGluVal-69  
 77-CysProHisCysAlaArgLeuGluProValLeu-87  
 89-LysHisAlaLysSerPheLysAspAspMetTyrLeu-100

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124-AlaAlaAlaGluSerLysAspValAlaAsn-133  
 143-GlnLysIleLysLeuGlnGluProGluValLeuLys-154  
 161-ThrAlaPheAspGlyLysLysVal-168  
 173-GluSerProGluSerGlnAlaArgAlaGlyLysMetGlnGluLeuThrGlu-189  
 191-PheGlnIleAspGlyThrPro-197  
 201-ValGlyGlyLysTyrLysValGluPheAlaAsp-211  
 213-GluSerGlyMetAsnThr-218  
 222-LeuAlaAspLysValArgGluGluGlnLysAlaAlaGln-234

**Hydrophilic Regions - Hopp-Woods**

1-MetLysSerArgHis-5  
 21-CysAspSerLysValGlnThr-27  
 29-ValProAlaAspSerAlaPro-35  
 63-GlnAlaGlyLysValGluVal-69  
 81-AlaArgLeuGluProValLeu-87  
 89-LysHisAlaLysSerPheLysAspAspMetTyrLeu-100  
 124-AlaAlaAlaGluSerLysAspValAla-132  
 143-GlnLysIleLysLeuGlnGluProGluValLeuLys-154  
 161-ThrAlaPheAspGlyLysLysVal-168  
 173-GluSerProGluSerGlnAlaArgAlaGlyLysMetGlnGluLeuThrGlu-189  
 203-GlyLysTyrLysValGluPheAlaAsp-211  
 222-LeuAlaAspLysValArgGluGluGlnLysAlaAlaGln-234

**g688**

**AMPHI Regions - AMPHI**

22-LeuSerAlaLeuPheSerLeu-28  
 119-GlyAspAlaLeuGlnAsnAlaAla-126

**Antigenic Index - Jameson-Wolf**

5-SerArgPheAlaGlnLysGlySerProValAsnLys-16  
 31-CysSerValGluArg-35  
 46-IleIleGlnGlyAsnGluLeuGluProArgAla-56  
 61-ArgProGlyMetThrLysAspGln-68  
 81-AlaPheHisThrAspArgTrpAspTyr-89  
 91-PheAsnThrSerArgAsnGlyIleIleLysGluArgSerAsnLeu-105  
 115-ValArgThrGluGlyAspAlaLeuGlnAsnAlaAlaGluAlaLeuArgAlaLysGlnAsnAlaAspLysGln-138

**Hydrophilic Regions - Hopp-Woods**

7-PheAlaGlnLysGlySerProVal-14  
 50-AsnGluLeuGluProArgAla-56  
 63-GlyMetThrLysAspGln-68  
 97-GlyIleIleLysGluArgSerAsn-104  
 115-ValArgThrGluGlyAspAlaLeuGlnAsnAlaAlaGluAlaLeuArgAlaLysGlnAsnAlaAspLysGln-138

**g689**

**AMPHI Regions - AMPHI**

16-ValLeuMetAlaValLeuValAlaLeu-24  
 33-LeuProAlaIleProGluMetAlaGln-41  
 49-ArgIleGluSerLeu-53  
 62-PheGlyGlnValAlaGlyGly-68  
 73-IleLysGlyArgLys-77  
 103-LeuLeuAsnLeuArgAlaValGlnAlaPhe-112  
 138-PheAlaLeuIleGlyIleIleLeu-145  
 152-AlaProMetValGlyAlaLeuLeuGlnGlyLeuGlyGlyTrpArgAlaIlePheVal-170  
 177-ProValLeuProGlyLeuValGlnTyrPhe-186

195-LysIleGlyArgAspVal-200  
 207-ArgPhelysArgValLeu-212  
 227-SerPheGlySerMetPheAla-233  
 288-GlyIleValValGln-292  
 347-AlaAsnAlaValSerGlyValPheArgSerLeuIle-358

**Antigenic Index - Jameson-Wolf**  
 1-TerTerSerProProLeuProProMetSerGlyLys-12  
 46-AspIleHisArgIleGluSer-52  
 71-SerAspIleLysGlyArgLysProVal-79  
 98-SerSerThrGluGln-102  
 124-MetValArgAspTyrTyrSerGlyArgLysAlaAla-135  
 189-AsnProAlaValGlyGlyLysIleGlyArgAspVal-200  
 207-ArgPhelysArgValLeuLysThrArgAla-216  
 275-LeuLysThrGlyAlaHisProGlnSer-283  
 340-PheLysGluGluGlyGlySerAla-347  
 390-LysAlaTrpLysGluAsnGluLysLysArgIleLeu-401

**Hydrophilic Regions - Hopp-Woods**  
 46-AspIleHisArgIleGluSer-52  
 71-SerAspIleLysGlyArgLysProVal-79  
 128-TyrTyrSerGlyArgLysAlaAla-135  
 195-LysIleGlyArgAspVal-200  
 207-ArgPhelysArgValLeuLysThrArgAla-216  
 340-PheLysGluGluGlyGlySer-346  
 390-LysAlaTrpLysGluAsnGluLysLysArgIleLeu-401  
 g690

**AMPHI Regions - AMPHI**  
 38-SerSerAlaSerSer-42  
 54-SerAlaProAspAsnValLysGlnAla-62  
 73-HisProAlaAlaGlyIleGlyAspLeuIleGlnGlnIleAlaGluHisIle-89  
 112-GlyTyrAspAsnIleGlnArgLeu-119  
 146-ThrArgThrIleSerArgGlnAlaGlnAspAla-156  
 185-ProLysArgAlaArgTyrPhe-191  
 209-GlyAsnPheGlnTyrIleGlyGlnLeuProGlyTyrLeuLysMetHisGlyGluMet-227

**Antigenic Index - Jameson-Wolf**  
 1-MetLysAsnLysThrSerSerLeu-8  
 20-ArgSerProSerLysGluAspLysThrLysGluAsnGlyAla-33  
 37-SerSerAlaSerSerAlaSerSerGlnThrAspLeuGlnPro-51  
 54-SerAlaProAspAsnValLysGlnAlaGluSerAlaProLeuAsnCysThrGly-71  
 86-AlaGluHisIleAspSerAspCys-93  
 100-AsnGluLeuGluThrArgPhe-101  
 108-LeuProGlyGlyTyrAspAsnIleGln-117  
 122-ProAspIleArgProGluAspProAspTyrHisGln-133  
 140-GluAspLeuArgTyrGlyThrArgThrIleSerArgGlnAlaGln-154  
 156-AlaIleMetGluGlnGluArgArgLeuArgGluAlaThr-168  
 173-GlnGlySerGlnLysThrArgGlyGlnGlyGluGluProLysArgAlaArgTyr-190  
 199-TyrLeuAsnArgHisAsnAsnGlyLeuGlyGlyAsn-210  
 223-MetHisGlyGluMetLeuGluAsnGlnSerLeu-233  
 235-ArgLeuSerAsnArgGluArgAsnProAspLysProPheLeu-248  
 251-HisPheAspGluAsnGlyLysIleThr-259  
 263-ValTyrGluLysAsnIle-268

**Hydrophilic Regions - Hopp-Woods**

1-MetLysAsnLysThrSer-6  
 20-ArgSerProSerLysGluAspLysThrLysGluAsnGlyAla-33  
 39-SerAlaSerSerAlaSerSerGlnThrAspLeu-49  
 54-SerAlaProAspAsnValLysGlnAlaGluSerAlaPro-66  
 87-GluHisIleAspSer-91  
 100-AsnGluLeuGluThr-104  
 124-IleArgProGluAspProAspTyrHisGln-133  
 140-GluAspLeuArgTyrGlyThr-146  
 148-ThrIleSerArgGlnAlaGln-154  
 156-AlaIleMetGluGlnGluArgArgLeuArgGluAlaThr-168  
 174-GlySerGlnLysThrArgGlyGlnGlyGluGluProLysArgAlaArgTyr-190  
 223-MetHisGlyGluMetLeuGlu-229  
 236-LeuSerAsnArgGluArgAsnProAspLysProPhe-247  
 251-HisPheAspGluAsnGlyLysIleThr-259  
**g691**  
**AMPHI Regions - AMPHI**  
 11-LysProAlaAlaSer-15  
 55-HisAsnGluLeuArgLysIleArgAla-63  
 101-AlaArgAspTyrVal-105

**Antigenic Index - Jameson-Wolf**  
 7-CysArgPheAlaLys-11  
 35-ProProAsnAspPheGlnProAsnCysAspIleArgArgLeuGlyLeuThrGlnGlyGlnHisAsnGluLeuA  
 rgLysIleArgAla-63  
 67-MetAlaGlyAspArgAlaArgLeuLysValMetHis-78  
 80-GluHisSerArgArgArgSerVal-87  
 91-IleSerSerAspValPheAsnArgAsnGluAlaArgAspTyrValGluSerArgTyrHisSerSerMet-113  
 115-PheAlaValAspGluLeuGluIle-122  
 131-ThrProGlnGlnGlnGln-136  
 140-SerSerCysLeuLys-144

**Hydrophilic Regions - Hopp-Woods**  
 43-CysAspIleArgArgLeuGly-49  
 54-GlnHisAsnGluLeuArgLysIleArgAla-63  
 67-MetAlaGlyAspArgAlaArgLeuLysValMetHis-78  
 80-GluHisSerArgArgArgSerVal-87  
 95-ValPheAsnArgAsnGluAlaArgAspTyrValGlu-106  
 115-PheAlaValAspGluLeuGluIle-122  
**g692**  
**AMPHI Regions - AMPHI**  
 9-SerGluSerIleArgArgIleTrpArgAsnGlyArgGlu-21  
 58-PheValAlaLeuGluAla-63  
 77-LeuGlyTyrValPheLysProLeuAlaValPheVal-88  
 106-GlnGlyPheGlyGlnLeuHis-112  
 143-PheAspValPheGlnValPheArgAsp-151  
 179-CysGluValGlyArgValValGlyArgGlyTyrGlyAlaAlaValPheAspPhePheGlnArgPheGlnPhe  
 -202  
 205-IleGlnSerGlnArgArgGlyArgHisLeuGluGlyPheGlyAsp-219  
 254-ValGlyLysPheAspGlnPheAspGlyVal-263  
 275-PheAspIleIleAlaGluVal-281  
 302-GlyArgGlyCys-306

**Antigenic Index - Jameson-Wolf**  
 4-ThrArgCysArgCysSerGluSerIleArgArgIleTrpArgAsnGlyArgGluTrpArgIleLysGlyGlnLy  
 sCysArgLeuAsnThrAspAlaValGln-37

89-GlyGlyPheAspGlyArgProValAspIleGlyLysAlaArgLeuLeuGlu-105  
 120-AlaValAspAspGlyLysIle-126  
 136-CysGlyPheLysLeuAspAspPheAspVal-145  
 150-ArgAspValGlyPheGlyCysGlyGlnArgIle-160  
 177-GlyAlaCysGluValGlyArgValValGlyArgGlyTyr-189  
 204-ArgIleGlnSerGlnArgArgGlyArgHisLeuGluGlyPheGlyAsp-219  
 236-GluAspValAspVal-240  
 256-LysPheAspGlnPheAspGlyVal-263  
 282-AlaHisGlyArgAlaGluAspAspPhePhePhe-292  
 296-ValIleGlyArgArgGlyGlyGlyArgGlyCysGlyArg-308  
 316-GlyCysGluAspGluArgGluCysGlyGlyLysGlyPheGluGlu-331

**Hydrophilic Regions - Hopp-Woods**

4-ThrArgCysArgCysSerGluSerIleArgArgIleTrpArgAsnGlyArgGluTrpArgIleLysGlyGlnLy  
 sCysArgLeuAsnThr-33  
 91-PheAspGlyArgProValAspIleGlyLysAlaArgLeuLeuGlu-105  
 120-AlaValAspAspGlyLysIle-126  
 139-LysLeuAspAspPheAsp-144  
 179-CysGluValGlyArgValValGly-186  
 206-GlnSerGlnArgArgGlyArgHisLeuGluGlyPheGly-218  
 236-GluAspValAspVal-240  
 282-AlaHisGlyArgAlaGluAspAspPhePhePhe-292  
 296-ValIleGlyArgArgGlyGlyGlyArgGlyCysGly-307  
 316-GlyCysGluAspGluArgGluCysGlyGly-325  
 327-LysGlyPheGluGlu-331

g694

**AMPHI Regions - AMPHI**

13-LeuThrProAlaSerThr-18  
 69-ArgGlyArgAlaCysArg-74  
 88-GlnValGlyArgValVal-93  
 103-CysArgHisPheAlaGln-108  
 110-ValAlaValGlyArgIleGly-116  
 139-ArgArgIleAlaAspValPheLeuVal-147  
 149-IleAlaAspIleGlyGlu-154  
 171-ArgGlyLeuAlaAspIleGlyGluPheValGlyValSerAsp-184  
 194-PheAspGlnLysHisPheAlaArgCys-202  
 238-HisGlnArgAlaSerArgIleLys-245  
 270-ArgAlaArgArgHisPheArgGlnValPheAsp-280  
 298-AspPheValAlaHisIle-303  
 327-AlaAlaArgIleGlyLysAspAsp-334

**Antigenic Index - Jameson-Wolf**

34-GlyGlnAspGluHisAspAla-40  
 45-ProProPheAlaHisGlyPhe-51  
 53-ProProSerAlaTyrGlyCysGln-60  
 63-ProHisGlnHisPheGlyArgGlyArgAlaCysArgTyr-75  
 82-PheLysProArgAla-86  
 97-ArgIleAspSerAlaArgCysArgHis-105  
 113-GlyArgIleGlyArgThrAspHisAsnHisAsp-123  
 130-LeuPheAspGlyGlyLeuProValGlyArgArgIleAla-142  
 150-AlaAspIleGlyIleThrArgValGlnArgGlyAspAsp-162  
 167-IleAspArgGluArgGlyLeuAlaAsp-175  
 189-HisIleSerAspArgPheAspGlnLysHisPheAla-200  
 202-CysLysLeuProHisArgAlaPheAsp-210  
 214-ProLeuMetProAspHisAspAspPheThr-223

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237-ArgHisGlnArgAlaSerArgIleLysTyrProGluThrAlaLeu-251  
 265-ArgIleAsnGlnCysArgAlaArgArgHisPhe-275  
 278-ValPheAspLysHisArg-283  
 303-IleAsnArgArgAlaGluPhe-309  
 313-ThrPheAspAsnThrAspCysProIleHisThrGlyAlaGluAlaAlaArgIleGlyLysAspAspGlyPhe  
 Ser-337  
 344-ProCysSerAspGly-348  
 356-LeuCysAspGlyArgTyrCysGlnAlaProProThrProHisArgArgArg-372

**Hydrophilic Regions - Hopp-Woods**

34-GlyGlnAspGluHisAspAla-40  
 68-GlyArgGlyArgAlaCysArg-74  
 82-PheLysProArgAla-86  
 97-ArgIleAspSerAlaArgCysArgHis-105  
 114-ArgIleGlyArgThrAspHisAsnHis-122  
 137-ValGlyArgArgIleAla-142  
 150-AlaAspIleGlyGluThrArgValGlnArgGlyAspAsp-162  
 167-IleAspArgGluArgGlyLeuAlaAsp-175  
 189-HisIleSerAspArgPheAspGlnLysHisPheAla-200  
 202-CysLysLeuProHisArgAlaPhe-209  
 217-ProAspHisAsp-221  
 237-ArgHisGlnArgAlaSerArgIleLysTyrProGluThrAlaLeu-251  
 267-AsnGlnCysArgAlaArgArgHisPhe-275  
 278-ValPheAspLysHisArg-283  
 303-IleAsnArgArgAlaGluPhe-309  
 314-PheAspAsnThrAsp-318  
 325-AlaGluAlaAlaArgIleGlyLysAspAspGlyPheSer-337  
 367-ThrProHisArgArgArg-372

**g695**

**AMPHI Regions - AMPHI**

34-GlnAsnSerGlnArg-38  
 41-SerLysProAlaGluArgTyrAlaAspCysProHis-52  
 83-AlaSerCysAlaSerValLeu-89  
 128-ValArgLeuSerAsnGluVal-134  
 157-ValGlnLysLeuAsp-161  
 182-ValGluThrAlaGlnAsnLeuTyrAsnGlnAlaLeuLysHisTyrGlnAsnGly-199  
 237-CysGluSerValIleGluIle-243  
 247-TyrAlaAsnArgPhelysAspSer-254  
 277-AlaArgAlaThrTrpArgSerLeuIleGlnThrTyrProGly-290

**Antigenic Index - Jameson-Wolf**

1-LeuProGlnThrArgProAlaArgArgHisHisArgHisArgGlnTyrPheValGluArgLysGlyAspAlaArgSerGlyPhe-28  
 32-GlnCysGlnAsnSerGlnArgPheGlnSerLysProAlaGluArgTyrAlaAspCysProHisHisProAlaArgArgArgPheAspProAlaSerGluLysIleMetLysThrLys-71  
 90-ProValProGluGlySerArgThrGluMetProThrGlnGluAsnAlaSerAspGlyIleProTyr-111  
 116-LeuGlnAspArgLeuAspTyrLeuGlu-124  
 126-LysIleValArgLeuSerAsnGluValGluMetLeuAsnGlyLysValLysAlaLeuGluHisThrLysIleHisProSerGlyArgThrTyrValGlnLysLeuAspAspArgLysLeuLysGlu-167  
 169-TyrLeuAsnThrGluGlyGlySerAla-177  
 192-AlaLeuLysHisTyrGlnAsnGlyArg-200  
 208-LeuLysGlyAlaAspGlyGlyAspGlyGlySerIleAlaGln-221  
 229-GlnSerArgAlaArgMetGlyAsnCys-237  
 243-IleGlyGlyArgTyrAlaAsnArgPheLysAspSerProThrAla-257  
 265-glyGluCysGlnTyr-269

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271-LeuGlnGlnLysAspIleAla-277

288-TyrProGlySerProAlaAlaLysArgAlaAlaAlaAlaValArgLysArg-304

**Hydrophilic Regions - Hopp-Woods**

2-ProGlnThrArgProAlaArgArgHisHisArgHisArg-14

17-PheValGluArgLysGlyAspAlaArgSer-26

35-AsnSerGlnArgPheGlnSerLysProAlaGluArgTyrAlaAsp-49

51-ProHisHisProAlaArgArgArgPheAspProAlaSerGluLysIleMetLysThrLys-71

92-ProGluGlySerArgThrGluMetProThrGlnGluAsnAlaSerAsp-107

116-LeuGlnAspArgLeuAspTyrLeuGlu-124

126-LysIleValArgLeuSerAsnGluValGluMetLeuAsnGlyLysValLysAlaLeuGluHisThrLysIle  
HisProSerGly-153

156-TyrValGlnLysLeuAspAspArgLysLeuLysGlu-167

209-LysGlyAlaAspGlyGlyAspGlyGlySerIleAlaGln-221

230-SerArgAlaArgMetGlyAsn-236

247-TyrAlaAsnArgPheLysAspSerProThrAla-257

265-GlyGluCysGlnTyr-269

271-LeuGlnGlnLysAspIleAla-277

292-ProAlaAlaLysArgAlaAlaAlaAlaValArgLysArg-304

g700

**AMPHI Regions - AMPHI**

6-ThrLeuPheSerValLeuValProMetPheAlaGlyPhePheIleArgValProLys-24

51-ArgValGluAspLeuGlySerArg-58

80-AlaLeuAlaValLeuGlyLysLeu-87

189-GlyValSerTrpThrLysGlyLeu-196

204-TrpTyrSerLeuSerGlyLeuVal-211

216-TyrGlyAlaValTrp-220

228-AspLeuAlaArgGluLeu-233

268-GlyAlaGlyGlyLeu-272

**Antigenic Index - Jameson-Wolf**

21-ArgValProLysProTyrLeuProAlaSerAspLysVal-33

50-SerArgValGluAspLeuGlySerArgLeuGlyAsp-61

88-SerProTrpArgIleGlyGlyLysGlyLysGlyVal-99

103-ValSerGlySerValArg-108

118-ValSerGlyLysLeuMet-123

128-MetProSerGluAsnAlaGlyMet-135

149-LeuLysSerSerGlyValSerLeu-156

160-LeuLeuAsnArgArgGlyIleArgLeu-168

245-ArgPheProAspAla-249

268-GlyAlaGlyGlyLeu-272

**Hydrophilic Regions - Hopp-Woods**

29-AlaSerAspLysVal-33

50-SerArgValGluAspLeuGlySerArgLeuGlyAsp-61

92-IleGlyGlyLysGlyLysGlyVal-99

149-LeuLysSerSerGlyValSer-155

160-LeuLeuAsnArgArgGlyIleArg-167

g701

**AMPHI Regions - AMPHI**

6-PheGlnValAlaGly-10

30-CysLeuGluThrSer-34

45-ProAsnSerPheAlaGlyPheLysArgPheSerSerIle-57

79-GlyProAlaProAlaMet-84

111-ArgAlaIleSerSerLeu-116

**Antigenic Index - Jameson-Wolf**  
 17-AlaGlnSerThrProSerSerProThrMet-26  
 29-ThrCysLeuGluThrSerProGluAlaGly-38  
 52-LysArgPheSerSer-56  
 72-AsnLysAlaAspIleProThrGlyProAla-81  
 104-GlyLysAlaSerLeuAsnSerArgAla-112  
 119-SerCysGlyGlyThrArgLeu-125

**Hydrophilic Regions - Hopp-Woods**  
 72-AsnLysAlaAspIleProThr-78  
**g702**  
**AMPHI Regions - AMPHI**  
 51-CysSerGlyLeuValThrValProAla-59  
 74-AlaSerSerProThrGlyValArgLysValIle-84

**Antigenic Index - Jameson-Wolf**  
 1-MetProCysSerLysAlaSerTrp-8  
 10-SerProGlyValAla-14  
 27-AlaLeuAlaArgAspSerCysLysProGlyLeu-37  
 41-ThrAlaProAlaSer-46  
 69-AlaIleArgArgMetAlaSerSerProThrGlyValArgLysValIleSer-85  
 88-GlyMetProProSerThrArgAlaArgAspLysSerThrAla-101  
 118-ArgIleSerArgGlyValSer-124

**Hydrophilic Regions - Hopp-Woods**  
 27-AlaLeuAlaArgAspSerCysLys-34  
 69-AlaIleArgArgMetAlaSer-75  
 78-ThrGlyValArgLysValIleSer-85  
 91-ProSerThrArgAlaArgAspLysSerThrAla-101  
 118-ArgIleSerArgGlyValSer-124  
**g703**  
**AMPHI Regions - AMPHI**  
 21-GlnThrLeuAlaThrValAsnGly-28  
 64-GluValValAsnThrValValAlaGlnGlu-73  
 79-LeuAspArgSerAlaGlu-84  
 136-GlnGluValLysAlaValTyrAspAsnIleSerGlyPheTyrLysGly-151  
 181-PheAspAlaValLeu-185  
 204-ValProLeuLysAspLeuGluGlnGlyValProProLeuTyrGlnAlaIleLysAspLeuLysLys-225  
 252-ValProSerPheAsp-256  
 270-ArgIleAspArgAlaValCys-276

**Antigenic Index - Jameson-Wolf**  
 1-MetLysAlaLysIle-5  
 26-ValAsnGlyGlnLysIleAspSerSerVal-35  
 43-PheArgAlaGluAsnSerArgAlaGluAspThrProGlnLeuArg-57  
 72-GlnGluValLysArgLeuLysLeuAspArgSerAlaGluPheLysAspAlaLeuAlaLysLeuArgAlaGluA  
 laLysLysSerGlyAspAspLysLysProSerPheLysThr-109  
 129-LysThrGlnProValSerGluGlnGluValLysAlaValTyr-142  
 144-AsnIleSerGlyPheTyrLysGlyThrGlnGluValLeu-157  
 160-IleLeuThrAspLysGluGluAsnAlaLysIleAlaValAlaAspLeuLysAlaLysLysGlyPhe-181  
 188-TyrSerLeuAsnAspArgThrLysArgThrGlyAlaProAspGlyTyrValPro-205  
 207-LysAspLeuGluGlnGlyValProPro-215  
 221-LysAspLeuLysLysGlyGluPheThrAlaThrProLeuLysAsnGlyAspPhe-238  
 243-TyrValAsnAspSerArgGluValLysValAspSerPheAspGluMetLysGly-260

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266-LeuGlnAlaGluArgIleAspArgAlaVal-275  
 282-AlaAsnIleLysProAlaLys-288

**Hydrophilic Regions - Hopp-Woods**

1-MetLysAlaLysIle-5  
 29-GlnLysIleAspSerSerVal-35  
 43-PheArgAlaGluAsnSerArgAlaGluAspThrProGlnLeuArg-57  
 72-GlnGluValLysArgLeuLysLeuAspArgSerAlaGluPheLysAspAlaLeuAlaLysLeuArgAlaGluA  
 laLysLysSerGlyAspAspLysLysProSerPhe-107  
 131-GlnProValSerGluGlnGluValLysAlaValTyr-142  
 160-IleLeuThrAspLysGluAsnAlaLysLysAlaValAlaAspLeuLysAlaLysLysGlyPhe-181  
 189-SerLeuAsnAspArgThrLysArgThrGlyAla-199  
 207-LysAspLeuGluGln-211  
 221-LysAspLeuLysLysGlyGluPhe-228  
 245-AsnAspSerArgGluValLysValProSerPheAspGluMetLysGly-260  
 266-LeuGlnAlaGluArgIleAspArgAlaVal-275  
 282-AlaAsnIleLysProAlaLys-288

**g704****AMPHI Regions - AMPHI**

36-AlaValAlaGlnSerIleIleAspSerGlyLeuGly-47  
 65-GlnGluIleLeuAspGlnIleArgLeuTyrAspLeuProGluValGlnSerAspPheValGluThrHis-87  
 184-LeuGlyMetMetGln-188  
 208-LeuGlnIleLeuHisTrpGlyGlyPheLeuMetValLeuPro-221  
 232-GlnGlyAlaLeuArgAspLeuLys-239  
 252-AlaIleIleMetThrPhelLeaGlyIleTyrSer-263  
 289-PheMetGluHisIleAlaArg-295  
 298-AlaGlyAspAlaAlaGluArgLeuValLysLeuIleProAlaPheCysHisArgMetProGlyTyrProAla  
 ValGlnAsp-324  
 326-ArgGluSerAlaValVal-331  
 400-GlyGlyThrArgLeuSerHissileValArgLeuLeuAspArgAlaLeuAla-416  
 423-GluLeuAlaGluGlnTyr-428  
 499-AlaIleGluThrLeuSerGln-505  
 527-IleGluLeuLeuGlySerMet-533  
 574-GlnArgLeuAsnArgIleGlyGluGlyValGly-584  
 639-LeuLysAspSerAlaAlaGluAlaValArgGlnLeuAla-651  
 670-GluThrAlaArgAlaLeuGlyIle-677  
 691-GluTyrValGluAlaLeuGlnLysGlu-699  
 744-AspLeuArgThrValAlaHisLeuLeuAsp-753  
 780-AlaValLeuGlyTyrValGlnProTrpIleAlaAla-791  
 799-LeuAlaValLeuGly-803

**Antigenic Index - Jameson-Wolf**

1-MetLysThrCys-5  
 9-GlyLeuAspValProGluAsn-15  
 20-ValArgTyrGluGlyGluAspArgGluThrCysCysValGly-33  
 42-IleAspSerGlyLeuGlySerTyrTyrLysArgArgThrAlaAspAlaLysLysThrGluLeuProProGlnG  
 luIleLeuAsp-69  
 77-ProGluValGlnSerAspPheValGluThrHisAsnGlyThrHis-91  
 112-GlnLeuLeuArgThrAspGlyIleVal-120  
 124-LeuAsnTyrSerThrHisArgCys-131  
 133-ValValTrpAspGlyLysIleArgLeu-142  
 149-IleArgGlnThrGlyTyr-154  
 158-ProTyrAspAlaGlnIleGluAlaAlaAsnGlnLysGluArgLysGlnTyr-175  
 199-TyrGlyGlyAspIleGluProAspPhe-207  
 234-AlaLeuArgAspLeuLysAsnArgAlaGlyMetAspThrPro-248

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293-IleAlaArgArgLysAlaGlyAspAlaAlaGluArgLeuVal-306  
 315-ArgMetProGlyTyr-319  
 323-GlnAspValArgGluSerAlaVal-330  
 342-LysProGlyGluThrIleProValaspGlyThrVal-353  
 355-GluGlyAsnSerAlaValAsnGluSer-363  
 365-LeuThrGlyGluSer-369  
 374-LysMetProSerGluLysValThrAla-382  
 393-IleArgThrAspArgThrGlyGlyGlyThrArg-403  
 414-AlaLeuAlaGlnLysProArgThrAlaGluLeuAlaGlu-426  
 486-ThrLeuAlaArgGluGlyIle-492  
 495-GlyGlyLysGlnAlaIle-500  
 510-IlePheAspIlysThrGlyThrLeuThrGlnGlyAsnProAlaValArgArgIleGluLeu-529  
 544-SerLeuGluGlnGlnSerGluHisProLeu-553  
 561-ArgIleSerGlyGlySerValPro-568  
 571-GlnValGlyGlnArgLeuAsnArgIleGlyGluGlyVal-583  
 589-ValAsnGlyGluThr-593  
 605-AlaGluIleSerGlyLysGluProGlnThrGluGlyGlyGlySer-619  
 635-LeuGlnAspProLeuLysAspSerAlaAlaGluAlaValArg-648  
 650-LeuAlaGlyLysAsnLeu-655  
 659-IleLeuSerGlyAspArgGluGluAlaValAlaGluThrAlaArg-673  
 684-AlaMetProGluAspLysLeuGluTyr-692  
 694-GluAlaLeuGlnLysGluGlyLysLys-702  
 707-GlyAspGlyIleAsnAspIle-713  
 727-GlyGlyThrAspIleAlaArgAspGlyAlaAsp-737  
 743-GluAspLeuArgThr-747  
 753-AspGlnAlaArgArgThrArgHisIleIle-762  
 807-ArgLeuHisLysArgGlyGluMetProSerGluGln-818

**Hydrophilic Regions - Hopp-Woods**

1-MetLysThrCys-5  
 22-TyrGluGlyGluAspArgGluThrCys-30  
 50-TyrLysArgArgThrAlaAspAlaLysLysThrGluLeuProPro-64  
 77-ProGluValGlnSerAspPheValGlu-85  
 87-HisAsnGlyThrHis-91  
 112-GlnLeuLeuArgThrAspGlyIleVal-120  
 133-ValValTrpAspAspGlyLysIleArgLeu-142  
 160-AspAlaGlnLysIleGluAlaAlaAsnGlnLysGluArgLysGlnTyr-175  
 201-GlyAspIleGluProAspPhe-207  
 234-AlaLeuArgAspLeuLysAsnArgArgAlaGlyMet-245  
 293-IleAlaArgArgLysAlaGlyAspAlaAlaGluArgLeuVal-306  
 323-GlnAspValArgGluSerAlaVal-330  
 375-MetProSerGluLysValThr-381  
 393-IleArgThrAspArgThrGlyGlyGlyThrArg-403  
 414-AlaLeuAlaGlnLysProArgThrAlaGluLeuAlaGlu-426  
 486-ThrLeuAlaArgGluGlyIle-492  
 522-ProAlaValArgArgIleGluLeu-529  
 545-LeuGluGlnGlnSerGluHisProLeu-553  
 574-GlnArgLeuAsnArgIleGlyGlu-581  
 607-IleSerGlyLysGluProGlnThrGluGlyGlyGly-618  
 637-AspProLeuLysAspSerAlaAlaGluAlaValArg-648  
 661-SerGlyAspArgGluAlaValAlaGluThrAlaArg-673  
 684-AlaMetProGluAspLysLeuGluTyr-692  
 694-GluAlaLeuGlnLysGluGlyLysLys-702  
 730-AspIleAlaArgAspGlyAlaAsp-737  
 743-GluAspLeuArgThr-747

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753-AspGlnAlaArgArgThrArgHisIleIle-762  
 807-ArgLeuHisLysArgGlyGluMetProSerGluGln-818  
 g705

**AMPHI Regions - AMPHI**  
 67-LysCysLeuLeuLysLeu-72  
 104-AsnProIleProAla-108  
 147-TyrMetGlnThrPheArgArgIleValAlaProGln-158  
 169-AsnGlnPheIleGlyLeuPheLysAsn-177  
 183-ValValThrValThrGluePheArgValAlaGln-194  
 196-ThrAlaAsnArgThr-200

**Antigenic Index - Jameson-Wolf**  
 13-ThrGluThrArgAlaAspMet-19  
 132-ValProLysGlyGlnTrpGlu-138  
 165-ProProLeuSerAsnGlu-170  
 193-AlaGlnGluThrAlaAsnArgThrTyrAsp-202  
 226-AlaArgLeuGluLysArgPheAspArgTyrValAla-237

**Hydrophilic Regions - Hopp-Woods**  
 13-ThrGluThrArgAlaAspMet-19  
 193-AlaGlnGluThrAlaAsnArgThr-200  
 226-AlaArgLeuGluLysArgPheAspArgTyrValAla-237  
 g706

**AMPHI Regions - AMPHI**  
 11-GlyArgTrpLeuAsnSerTyr-17  
 24-ArgLeuIleHisAlaValArg-30  
 39-ThrAlaLeuAlaArgLeuLeuHis-46  
 70-IleTyrSerAsnAlaValGluArgMetLeuGlyThrValIleGly-84  
 111-ThrAlaSerAlaLeuAlaGlyTrpAlaAla-120  
 153-ArgAlaMetAsnValle-158  
 183-LeuAlaAspAsnLeuAlaAspCysSerLysMetIleAlaGluIleSerAsnGlyArg-201  
 241-SerMetMetGluAlaMetGlnHisAlaHisArgLysIleVal-254  
 318-AlaLeuAlaGluHisLeuHis-324

**Antigenic Index - Jameson-Wolf**  
 1-MetAsnSerSerGlnArgLysArgLeuSerGlyArgTrpLeuAsnSerTyrGluArgTyrArgHisArgArgLe  
 u-25  
 30-ArgLeuGlyGlyThr-34  
 71-TyrSerAsnAlaValGluArgMetLeu-79  
 97-HisTyrPheHisGlyAsnLeu-103  
 122-GlyLysAsnGlyTyrVal-127  
 140-GlyAspAsnGlySerCluTrpLeuAsp-148  
 186-AsnLeuAlaAspCysSerLysMetIleAlaGluIleSerAsnGlyArgArgMetThrArgGluArgLeuGlu  
 GlnAsnMetValLysMetArgGlnIleAsn-219  
 221-ArgMetValLysSerArgSerHisLeuAlaAlaThrSerGlyGluSerArgIleSerProSerMet-242  
 249-AlaAlaHisArgLysIleValAsn-255  
 266-LysLeuGlnSerProLysLeuAsnGlySerGluIleArgLeuLeuAsp-281  
 289-ThrAspLeuGlnGln-293  
 300-GlyArgHisAlaArgArgIleArgIleAspThrAlaIleAsnProGluLeuGluAlaLeuAla-320  
 334-SerThrAsnMetArgGlnIle-341  
 349-GlnArgThrArgArgLysTrpLeuAspAlaHisGluArgGlnHisLeu-364  
 367-SerLeuLeuGluThrArgGluHisGly-375

**Hydrophilic Regions - Hopp-Woods**  
 3-SerSerGlnArgLysArgLeuSer-10

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17-TyrGluArgTyrArgHisArgArgLeu-25  
 74-AlaValGluArgMetLeu-79  
 142-AsnGlySerGluTrpLeu-147  
 186-AsnLeuAlaAspCysSerLysMetIleAla-195  
 198-SerAsnGlyArgArgMetThrArgGluArgLeuGluGlnAsnMetValLysMetArgGlnIleAsn-219

221-ArgMetValLysSerArgSerHis-228  
 232-ThrSerGlyGluSerArgIleSer-239

249-AlaHisArgLysIleValAsn-255

266-LysLeuGlnSerProLysLeuAsnGlySerGluIleArgLeuLeuAsp-281

301-ArgHisAlaArgArgIleArgIle-308

314-ProGluLeuGluAlaLeuAla-320

336-AsnMetArgGlnGluIle-341

349-GlnArgThrArgArgLysTrpLeuAspAlaHisGluArgGlnHisLeu-364

367-SerLeuLeuGluThrArgGluHisGly-375

**g707**

**AMPHI Regions - AMPHI**

36-GlyIleGluLysMetAlaThrGln-43

91-HisAlaGlyAspIleAsnGlnIleMetSerLeu-101

116-IleLeuAlaAlaPro-120

134-ProGlyIyrLeuArgSerIleArgIle-142

168-AspLeuLeuAsnLeuArgAsp-174

182-LeuLysCysLeuPro-186

208-ValGlnTrpArgArgLeuLeuPro-215

248-SerAspMetPheTyr-252

256-GlyArgSerIleGlyGly-261

301-ArgTyrHisGlnAlaValSerGlyLeuSerGluValTyrAsp-314

368-TrpLeuAlaGluLeuSerHis-374

393-ThrGlyMetLysAspAlaLeuArgAlaProGluGluAlaPheGlyGluGly-409

440-HisAlaGlnTrpAsnLys-445

542-LeuLysLysProGluTyrPhe-548

**Antigenic Index - Jameson-Wolf**

1-GluAlaValSerGlnGlnGlnAspIleLeuGlnArgGlnArgGluLysGlnLeuArgGluGlnMetGlnProGluGlnAspValArgLeuAspGlyThrAspThrGlyIleGluLysMetAla-41

44-ValGlyGlyAlaAsnSerAspGluAlaSerProCys-55

62-GluLeuValGlyGluGluAlaAlaLys-70

120-ProGlnAspLeuAsnSerGlyLysLeu-128

140-IleArgIleAspArgSerAsnAspAspGlnThrHis-151

160-AsnLysPheProThrArgSerAsnAspLeuLeuAsn-171

173-ArgAspLeuGluGlnGlyLeuGluAsn-181

188-AlaGluAlaAspLeu-192

196-ProValGluArgGluProAsnGlnSerAsp-205

221-GlyMetAspAsnSerGlySerGluAlaThrGlyLysTyrGlnGly-235

241-AlaAspAsnProPheGlyLeu-247

255-TyrGlyArgSerIleGlyGlyThrProAspGluGluAsnPheAspGlyHisArgLysGluGlyGlySerAsn-278

297-HisAsnGlyTyrArg-301

311-GluValTyrAspTyrAsnGlyLysSerTyrAsnThrAspPheGlyPhe-326

330-LeuTyrArgAspAlaLysArgLysThrTyrLeu-340

345-TrpThrArgGluThrLysSerTyrIleAspAspAlaGluLeuThrValGlnArgArgLysThrThr-366

372-LeuSerHisLysGlyTyrIleGlyArgSerThrAlaAspPheLysLeuLysTyrLysHisGlyThrGlyMet

LysAspAlaLeuArgAlaProGluGluAlaPheGlyGluGlyThrSerArg-412

419-SerAlaAspValAsnThrPro-425

442-GlnTrpAsnLysThrProLeuThrSerGlnAspLysLeuAla-455

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460-HisThrValArgGlyPheAspGlyGluMetSerLeuProAlaGluArgGlyTrpTyrTrpArgAsnAspLeu  
 SerTrpGlnPheLysProGlyHis-491  
 503-SerGlyGlnSerAlaLys-508  
 540-ArgAlaLeuLysLysProGluTyrPheGlnThrLysLysTrpValThr-555

**Hydrophilic Regions - Hopp-Woods**

1-GluAlaValSerGlnGlnGlnAspIleLeuGlnArgGlnArgGluLysGlnLeuArgGluGlnMetGlnProGl  
 uGlnAspValArgLeuAspGlyThrAspThrGlyIleGluLysMetAla-41  
 47-AlaAsnSerAspGluAlaSer-53  
 62-GluLeuValGlyGluGluAlaAlaLys-70  
 121-GlnAspLeuAsnSerGlyLys-127  
 140-IleArgIleAspArgSerAsnAspAspGlnThrHis-151  
 162-PheProThrArgSerAsnAsp-168  
 173-ArgAspLeuGluGlnGlyLeuGluAsn-181  
 188-AlaGluAlaAspLeu-192  
 196-ProValGluArgGluProAsnGlnSer-204  
 222-MetAspAsnSerGlySerGluAlaThrGlyLysTyr-233  
 259-IleGlyGlyThrProAspGluGluAsnPheAspGlyHisArgLysGluGlyGlySer-277  
 313-TyrAspTyrAsnGly-317  
 330-LeuTyrArgAspAlaLysArgLysThrTyrLeu-340  
 345-TrpThrArgGluThrLysSerTyrIleAspAspAlaGluLeuThrValGlnArgArgLysThrThr-366  
 381-SerThrAlaAspPheLysLeuLysTyrLysHis-391  
 393-ThrGlyMetLysAspAlaLeuArgAlaProGluGluAlaPheGly-407  
 447-ProLeuThrSerGlnAspLysLeuAla-455  
 463-ArgGlyPheAspGlyGluMet-469  
 540-ArgAlaLeuLysLysProGluTyrPheGln-549

**g708****AMPHI Regions - AMPHI**

26-ProSerArgAlaGluLysAlaAsnGlnValSerAsnIle-38  
 56-ThrAlaSerIleGluAspAlaLeuLysSerAsnPro-67  
 79-IleTyrGlnTyrLeuLys-84  
 89-AlaGlnGluSerPhe-93  
 119-AsnArgProAlaGluSerMetAla-126  
 128-PheAspLysAlaLeu-132  
 142-IleAlaAsnLeuAsnLys-147  
 176-ProAlaPheLysGluLeuAlaArg-183  
 221-LysAlaLeuGlyAsnValGlnAla-228

**Antigenic Index - Jameson-Wolf**

2-ProPheLysProSerLysArgIleSer-10  
 19-AlaCysSerThrSerTyrArgProSerArgAlaGluLysAlaAsnGln-34  
 46-TyrMetArgGlyGlnAspTyrArgGlnAlaThrAlaSerIleGluAspAlaLeuLysSerAsnProLysAsnG  
 luLeu-71  
 84-LysValAsnAspLysAlaGlnGluSerPheArg-94  
 97-LeuSerIleLysProAspSerAlaGluIleAsnAsnAsnTyrGlyTrp-112  
 115-CysGlyArgLeuAsnArgProAlaGlu-123  
 131-AlaLeuAlaAspProThrTyrProThr-139  
 145-LeuAsnLysGlyIleCysSerAlaLysGlnGlyGln-156  
 176-ProAlaPheLysGluLeuAlaArgThrLysMet-186  
 191-LeuGlyAspAlaAspTyrTyrPheLysLysTyrGlnSerArgValGluValLeuGlnAlaAspAspLeu-21  
 3  
 240-PheProTyrSerGluGluLeuGln-247

**Hydrophilic Regions - Hopp-Woods**

4-LysProSerLysArgIle-9

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24-TyrArgProSerArgAlaGluLysAlaAsnGln-34  
 46-TyrMetArgGlyGlnAspTyrArgGln-54  
 56-ThrAlaSerIleGluAspAlaLeuLysSerAsnProLysAsnGlu-70  
 84-LysValAsnAspLysAlaGlnGluSerPheArg-94  
 99-IleLysProAspSerAlaGluIle-106  
 117-ArgLeuAsnArgProAlaGlu-123  
 149-IleCysSerAlaLysGlnGly-155  
 177-AlaPheLysGluLeuAlaArgThrLysMet-186  
 201-TyrGlnSerArgValGluValLeuGlnAlaAspAspLeu-213  
**g709**

**AMPHI Regions - AMPHI**

6-SerLeuLeuAspMetProArgGlyGlu-14  
 18-ValValValAlaLeuIleAlaAlaMetGly-27  
 37-ProHisMetSerIleIleAlaAlaIleValValLeu-48  
 54-AlaArgGlyLeuLysTyr-59  
 67-IleGlyAlaLeuAsnGlnGlyMet-74  
 115-SerAlaPheAlaLeuCysSerVal-122  
 130-SerLeuThrAlaCysAla-135  
 171-ProLeuSerAspThr-175  
 185-IleAspLeuPheGluHisIleLysAsnMetMetTyrThrThr-198  
 221-LeuAsnSerValGluSerPheArg-228  
 245-PheAlaLeuLeuValLeu-251  
 261-AlaMetLeuPheThrValIleAlaAlaValAlaValThrTyr-274  
 278-ThrProAspLeuArgGlnLeuGlyAlaTrpPhe-288  
 298-AlaPheLysAspIleAlaLysLeuIleSerArgGlyGly-310  
 334-LeuGlyValIleProSerLeuLeuGluAlaAlaValArgThrPheLeuThr-349  
 382-ThrPheLysProVal-386  
 396-AsnLeuSerArgThrLeuGluAspAlaGlyThrValIleAsnProLeuValProTrpSerValCysGlyVal  
 PheIleSerHis-423

**Antigenic Index - Jameson-Wolf**

8-LeuAspMetProArgGlyGluAla-15  
 55-ArgGlyLeuLysTyrAsnAspMetGln-63  
 165-PheGlyAspLysMetSerProLeuSerAspThrThrGly-177  
 222-AsnSerValGluSerPheArgSerGlnLeuGlu-232  
 277-SerThrProAspLeuArgGln-283  
 290-GlyGlyFyrLysLeuGluGlyGluAlaPheLysAspIleAlaLysLeuIleSerArgGlyGlyLeuGlu-31  
 2  
 349-ThrAsnAlaGlyArgAlaThr-355  
 378-LeuSerGlyGluThrPheLysProValTyrAspLysLeuGly-391  
 396-AsnLeuSerArgThrLeuGluAspAlaGlyThr-406

**Hydrophilic Regions - Hopp-Woods**

8-LeuAspMetProArgGlyGluAla-15  
 57-LeuLysTyrAsnAsp-61  
 167-AspLysMetSerProLeuSerAsp-174  
 225-GluSerPheArgSerGlnLeuGlu-232  
 279-ProAspLeuArgGln-283  
 293-LysLeuGluGlyGluAlaPheLysAspIleAlaLysLeuIleSer-307  
 399-ArgThrLeuGluAspAlaGly-405  
**g716**

**AMPHI Regions - AMPHI**

33-GlyValGlnLysSerAlaGlnGly-40  
 81-AlaThrValLysLysAlaHisLysHisThrLysAla-92

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**Antigenic Index - Jameson-Wolf**

1-MetAsnLysAsnIle-5  
 26-LysProAlaSerAsnAlaThrGlyValGlnLysSerAlaGlnGlySerCysGlyAlaSerLysSerAlaGluGlySerCysGlyAlaSerLysSerAlaGluGly-63  
 65-AlaAlaSerLysAlaGlyGluGlyLysCysGlyGluGlyLysCysGlyAlaThrValLysLysAlaHisLysHisThrLysAlaSerLysAlaLysSerAlaGluGlyLysCysGlyGluGlyLysCysGlySerLys-112

**Hydrophilic Regions - Hopp-Woods**

33-GlyValGlnLysSerAlaGln-39  
 43-GlyAlaSerLysSerAlaGluGlySerCysGlyAlaSerLysSerAlaGluGlySerCys-62  
 65-AlaAlaSerLysAlaGlyGluGlyLysCysGlyGluGlyLysCys-79  
 81-AlaThrValLysLysAlaHisLysHisThrLysAlaSerLysAlaLysAlaLysSerAlaGluGlyLysCysGlyGluGlyLysCysGlySerLys-112  
 g717

**AMPHI Regions - AMPHI**

87-AlaAlaIleAlaAla-91  
 174-ThrAlaValTyrAlaLeuAlaAsn-181  
 209-LeuHisArgGlyLeu-213  
 223-SerLeuAlaTyrTrp-227  
 241-AlaGlyLeuGluGlnLeuGly-247  
 263-GlnSerIlePheSerThrValTrpThrProTyrIlePheArgAlaIleGluGlu-280  
 305-ThrGlyIlePheSerProLeuAlaSer-313  
 347-LeuAsnValValArgLysThr-353  
 358-LeuAlaThrLeuGlyAlaLeuAla-365  
 401-SerSerCysArgLeuTrpGlnProLeuLysArgLeu-412  
 430-CysPheGlyThrPro-434  
 442-GlyValTrpAlaAlaTyrLeuAlaGly-450  
 457-LysAsnLeuHisLysLeuPheHisTyr-465

**Antigenic Index - Jameson-Wolf**

1-MetAspThrLysGlu-5  
 32-ProAlaAspAspIleGlyArg-38  
 69-AlaAspLysAspThrLeu-74  
 95-SerArgProSerLeuProSerGluIle-103  
 135-MetGluGlyArgAla-139  
 192-AsnArgCysArgLeuLysAlaValArgArgAlaProPheSer-205  
 231-SerAlaAspArgLeuPheLeu-237  
 277-AlaIleGluGluAsnAlaThrProAlaArgLeu-287  
 289-AlaThrAlaGluSer-293  
 317-ProGluAsnTyrAla-321  
 349-ValValArgLysThrArgProIleAla-357  
 376-ProSerGlyGlyThrArgGlyAla-383  
 398-LysThrGluSerSerCysArgLeu-405  
 453-LeuArgHisArgLysAsnLeu-459

**Hydrophilic Regions - Hopp-Woods**

1-MetAspThrLysGlu-5  
 69-AlaAspLysAspThrLeu-74  
 135-MetGluGlyArgAla-139  
 192-AsnArgCysArgLeuLysAlaValArgArgAlaPro-203  
 277-AlaIleGluGluAsnAlaThrProAlaArgLeu-287  
 289-AlaThrAlaGluSer-293  
 349-ValValArgLysThrArgPro-355  
 378-GlyGlyThrArgGly-382  
 399-ThrGluSerSerCys-403

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453-LeuArgHisArgLysAsnLeu-459  
**g728**  
**AMPHI Regions - AMPHI**  
 11-SerPhePheAlaLeuValPheAla-18  
 39-AlaThrGluValProGluAsnPro-46  
 48-AlaPheValAlaLysLeuAlaArgLeuPheArgAsnAla-60  
 74-GluGluSerLeuAlaGlyAlaValAspAsp-83  
 167-HisGlyGluAsnTyrGluThr-173  
 198-GluAspValTyrGluHisCysLeuGlyCysTyrGlnMet-210  
 218-TyrArgAspValAlaAsn-223  
 235-SerAsnArgIleAlaSer-240  
 251-MetArgGluLeuMetProArg-257  
 355-GluLysGluValSerArgTyrAlaGluAlaAlaAlaArg-367

**Antigenic Index - Jameson-Wolf**  
 29-IleAsnProArgTrp-33  
 35-LeuSerAspThrAlaThrGluValProGluAsnProAsnAla-48  
 57-PheArgAsnAlaAspArgAla-63  
 67-ValLysGluSerMetArgThrGluGluSerLeu-77  
 80-AlaValAspAspGlyProLeuGlnSerGluLysAspTyr-92  
 98-ArgLeuSerArgLeuLysGluLysAlaLys-107  
 112-ThrGluGlnGluHisGlyGlu-118  
 125-TyrIleGlyGluGlyGly-130  
 136-LeuSerGlnArgSerProGluAlaPheVal-145  
 149-TyrLeuTyrArgAsnAspArgProPheSer-158  
 166-AlaHisGlyGluAsnTyrGluThrThrGlyGluTyrArgVal-179  
 182-GlnProAspGlySerVal-187  
 190-AlaAlaGlyArgGlyLysIleGlyGluAspValTyr-201  
 217-LysTyrArgAspValAlaAsnAspGluGlnLysValTrpAspPheArgGluGluSerAsnArgIleAlaSer  
 AspSerArgAspTyrVal-246  
 250-AsnMetArgGluLeuMetProArgGlyMetLysAlaAsnSer-263  
 267-GlyTyrAspAlaAspGlyLeuProGlnLys-276  
 280-SerPheAspAsnGlyLysLysArgGlnSerPheGluTyrTyrLeuLysAsnGlyAsn-298  
 309-LeuLysAlaAspGlyValThr-315  
 329-LeuAspGlyGlyArgIleArgLeuGluGluLysGlnGlyAspArgLeuProAspPhe-347  
 349-LeuAsnLeuGluAspLeuGluLysGluValSerArgTyrAlaGluAlaAlaArgArgSerGlyGlyArg  
 ArgGlyLeuSerHis-377

**Hydrophilic Regions - Hopp-Woods**  
 38-ThrAlaThrGluValProGluAsnPro-46  
 57-PheArgAsnAlaAspArgAla-63  
 67-ValLysGluSerMetArgThrGluGluSerLeu-77  
 80-AlaValAspAspGlyProLeuGlnSerGluLysAspTyr-92  
 98-ArgLeuSerArgLeuLysGluLysAlaLys-107  
 112-ThrGluGlnGluHisGlyGlu-118  
 136-LeuSerGlnArgSerProGlu-142  
 151-TyrArgAsnAspArgProPhe-157  
 169-GluAsnTyrGluThrThrGlyGluTyr-177  
 190-AlaAlaGlyArgGlyLysIleGlyGluAspValTyr-201  
 217LysTyrArgAspValAlaAsnAspGluGlnLysValTrpAspPheArgGluGluSerAsnArgIleAlaSer  
 AspSerArgAsp-244  
 250-AsnMetArgGluLeuMetProArgGlyMetLys-260  
 268-TyrAspAlaAspGlyLeuPro-274  
 282-AspAsnGlyLysLysArgGlnSer-289  
 309-LeuLysAlaAspGlyValThr-315

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331-GlyGlyArgIleIleArgGluGluLysGlnGlyAspArgLeuPro-345  
 349-LeuAsnLeuGluAspLeuGluLysGluValSerArgTyrAlaGluAlaAlaArgArgSerGlyGlyArg  
 ArgGlyLeuSer-376

**g729**

**AMPHI Regions - AMPHI**

21-CysThrMetIleProGlnTyr-27  
 55-HisAspTyrPheAla-59  
 61-ProArgLeuGlnLysLeuIleAspIle-69  
 149-GlnGlyTyrPheAla-153  
 242-LeuAlaThrLeuLeasn-247  
 250-IleProGluAspLeuProAla-256  
 268-LysLeuProAlaGlyLeu-273  
 321-GluLeuGlyGlyLeuPheLysSerGly-329  
 371-VaIGlnSerAlaPheGlnAspValAlaAsnAla-381  
 388-LeuAspLysAlaTyrAspAlaLeuSerLysGlnSerArg-400  
 419-GlyAlaLeuAspLeuLeuAspAlaGlu-427  
 442-LeuThrArgAlaGluAsnLeuAlaAspLeuTyrLysAlaLeuAspGlyGlyLeu-459

**Antigenic Index - Jameson-Wolf**

25-ProGlnTyrGluGlnProLysValGluVal-34  
 36-GluThrPheGlnAsnAspThrSerValSerSer-46  
 53-GlyTrpHisAspTyrPheAlaAspProArgLeuGlnLys-65  
 70-AlaLeuGluArgAsnThrSerLeuArgThr-79  
 85-GluIleTyrArgLysGlnTyrMetIleGluArgAsnAsnLeuLeuPro-100  
 106-AlaAsnGlySerArgGlnGlySerLeuSerGlyGlyAsnValSerSerTyrAsn-124  
 138-GlyArgValArgSerAsnSerGluAlaAla-147  
 156-AlaAsnArgAspAlaAla-161  
 173-TyrPheAsnGluArgTyrAlaGluLysAlaMet-183  
 188-ArgValLeuLysThrArgGluGluThrTyrLysLeuSerGluLeuArgTyr-204  
 215-ArgGlnGlnAlaLeuIleGluSerAlaLysAlaAspTyr-228  
 232-AlaArgSerArgGluGlnAlaArgAsn-240  
 247-AsnArgPrcIleProGluAspLeuProAla-256  
 277-ValLeuLeuAspArgProAspIleArgAlaAlaGluHisAlaLeuLysGlnAlaAsnAla-296  
 310-ArgLeuThrGlySerValGlyThrGlySer-319  
 326-PheLysSerGlyThr-330  
 347-GlyThrAsnLysAlaAsnLeuAspValAlaLysLeuArgGlnGln-361  
 383-AlaAlaArgGluGlnLeuAspLysAlaTyrAspAlaLeuSerLysGlnSerArgAlaSerLysGluAlaLeu  
 Arg-407  
 411-LeuArgTyrLysHisGlyValSer-418  
 424-LeuAspAlaGluArgIleSerTyrSerAlaGluGly-435  
 442-LeuThrArgAlaGluAsnLeu-448  
 455-LeuAspGlyGlyLeuLysArgAspThrGlnThrGlyLys-467

**Hydrophilic Regions - Hopp-Woods**

28-GluGlnProLysValGluVal-34  
 42-ThrSerValSerSer-46  
 61-ProArgLeuGlnLys-65  
 70-AlaLeuGluArgAsnThrSerLeu-77  
 91-TyrMetIleGluArgAsnAsn-97  
 107-AsnGlySerArgGlnGlySer-113  
 138-GlyArgValArgSerAsnSerGluAlaAla-147  
 156-AlaAsnArgAspAlaAla-161  
 177-ArgTyrAlaGluLysAlaMet-183  
 188-ArgValLeuLysThrArgGluGluThrTyrLys-198  
 200-SerGluLeuArgGlyTyr-204

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215-ArgGlnGlnGluAlaLeuIleGluSerAlaLysAlaAspTyr-228  
 232-AlaArgSerArgGluGlnAlaArgAsn-240  
 249-ProIleProGluAspLeuPro-255  
 277-ValLeuLeuAspArgProAspIleArgAlaAlaGluHisAlaLeuLysGlnAlaAsn-295  
 350-LysAlaAsnLeuAspValAlaLysIleArgGln-360  
 383-AlaAlaArgGluGlnLeuAspLysAlaTyrAspAlaLeuSerLysGlnSerArgAlaSerLysGluAlaLeu  
 Arg-407  
 424-LeuAspAlaGluArgIleSerTyr-431  
 442-LeuThrArgAlaGluAsnLeu-448  
 455-LeuAspGlyGlyLeuLysArgAspThrGlnThrGlyLys-467  
 g730  
**AMPHI Regions - AMPHI**  
 6-ArgLeuThrAsnLeuLeuAlaAlaCysAla-15  
 26-LeuAlaAlaAspLeu-30  
 67-LysIleAsnValIleGlnAspTyrThrHisGln-77  
 111-AsnHisAlaAlaAsp-115  
 141-HisProAlaAspAlaTyrAspGlyProLysGlyGlyAsnTyrProLysProThr-158  
 187-GlnArgIlePheAspAsnTyrAsnAsnLeuGlySerAsnPheSerAspArgAlaAspGlu-206  
 214-HisAsnAlaLysLeu-218  
 220-ArgTrpGlyAsnSerMetGluPheValAsnGlyValAla-232  
 234-GlyAlaLeuAsnProPheIleSer-241  
 262-AlaAlaMetArgAsnIleAla-268  
 277-AlaAlaIleGlyGlyLeuGlySerAla-285  
 288-PheGluLysAsnThrArgGluAlaValAspArgTrpIleGlnGlu-302  
 305-AsnAlaAlaGluThrValGluAlaLeuValAsnValLeuProPheAlaLysValLysAsnLeuThrLysAla  
 AlaLysPro-331  
 353-LeuVallysThrAlaAspGlyTyrLysAlaIleAlaHisIleGlnAla-368  
 390-ArgTyrGlyAsnProTyr-395  
 403-ValSerAspGlyIle-407  
 434-LysAlaGlySerArgLeuLeuSerGluSer-443  
 458-ProLeuLysAlaTyr-462  
 510-AspSerHisArgSerValGlyAspSerAsnArgValValArgGluGlyLys-526  
 553-GlnValThrGlnPheLys-558

**Antigenic Index - Jameson-Wolf**

2-LysProLeuArgArgLeuThr-8  
 35-PheIleThrAspAsnThrGlnArgGlnHisTyrGluProGlyGlyLys-50  
 55-GlyAspProArgGlySerValSerAspArgThrGlyLysIleAsnVal-70  
 99-SerGlyHisGlyHisGluGluHisAlaProPheAsp-110  
 112-HisAlaAlaAspSerAlaSerGluGluLysGlyAsnValAspAspGlyPhe-128  
 133-LeuAsnTrpGluGlyHisGluHisHisProAlaAspAlaTyrAspGlyProLysGlyGlyAsnTyrProLys  
 ProThrGlyAlaArgAspGluTyrThrTyrHisVal-168  
 170-GlyThrAlaArgSerIleLysLeuAsnProThrAspThrArgSerIleArgGlnArgIle-189  
 191-AspAsnTyrAsnAsnLeuGlySerAsnPheSerAspArgAlaAspGluAlaAsnArgLysMetPheGluHis  
 AsnAlaIlysLeuAspArgTrpGlyAsnSer-224  
 257-TyrAlaIleAspLysAlaAlaMet-264  
 271-ProAlaGluGlyLysPhe-276  
 287-GlyPheGluLysAsnThrArgGluAlaValAsp-297  
 299-TrpIleGlnGluAsnProAsnAlaAlaGluThrValGlu-311  
 323-LysAsnIleThrLysAlaAlaLysProGlyLysAlaAlaValSerGlyAspPheSerLysSerTyr-344  
 355-LysThrAlaAspGlyTyrLys-361  
 367-GlnAlaGlyAspArgValLeuSerLysAspGluAlaSerGlyGluThrGlyTyrLysProValThrAlaArg  
 TyrGlyAsnProTyrGlnGlu-397  
 403-ValSerAspGlyIleGlyAsnSer-410

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422-TyrSerAspGlyLysTrpIleLysAlaGluAspLeuLysAlaGlySerArgLeuLeuSerGluSerGlyLys  
ThrGlnThr-448  
453-ValValLysProLysProLeuLys-460  
474-ValllysGlyAsnGlnAlaGluThrGlu-482  
487-HisasnAspCysProProLysProLysProThrAsnHisAlaGlnGlnArgLysGluGluAlaLysAsnAsp  
SerHisArgSerValGlyAspSerAsnArgValValArgGluGlyLysGlnTyrLeuAspSerAspThrGlyAsn-  
535  
538-TyrValLysGlyAspLysVal-544  
547-LeuThrProAspGlyArgGlnValThrGlnPheLysAsnSerLysAlaAsnThrSerLysArgValLysAsn  
GlyLysTrpThrProLys-576

**Hydrophilic Regions - Hopp-Woods**

2-LysProLeuArgArgLeuThr-8  
39-AsnThrGlnArgGlnHisTyrGluProGlyGly-49  
55-GlyAspProArgGlySerValSerAspArgThrGlyLys-67  
102-GlyHisGluGluHisAlaPro-108  
112-HisAlaAlaAspSerAlaSerGluGluLysGlyAsnValAspAspGly-127  
135-TrpGluGlyHisGluHisPro-142  
144-AspAlaTyrAspGlyProLysGlyGlyAsnTyrProLys-156  
158-ThrGlyAlaArgAspGluTyr-164  
170-GlyThrAlaArgSerIleLys-176  
178-AsnProThrAspThrArgSerIleArgGlnArgIle-189  
200-PheSerAspArgAlaAspGluAlaAsnArgLysMetPheGluHisAsnAlaLysLeuAspArgTrpGlyAsn-  
223  
257-TyrAlaIleAspLysAlaAlaMet-264  
271-ProAlaGluGlyLysPhe-276  
287-GlyPheGluLysAsnThrArgGluAlaValAsp-297  
303-AsnProAsnAlaAlaGluThrValGlu-311  
323-LysAsnLeuThrLysAlaAlaLysProGlyLysAlaAlaVal-336  
355-LysThrAlaAspGlyTyrLys-361  
368-AlaGlyArgValLeuSerLysAspGluAlaSerGlyGluThrGlyTyr-384  
403-ValSerAspGlyIleGly-408  
426-LysTrpIleLysAlaGluAspLeuLysAlaGlySer-437  
439-LeuLeuSerGluSerGlyLysThrGlnThr-448  
453-ValValLysProLysProLeuLys-460  
477-AsnGlnAlaGluThrGlu-482  
489-AspCysProProLysProLysProThrAsn-498  
500-AlaGlnGlnArgLysGluGluAlaLysAsnAspSerHisArgSerValGlyAspSerAsnArgValValArg  
GluGlyLysGlnTyrLeuAspSerAspThrGly-534  
539-ValllysGlyAspLys-543  
549-ProAspGlyArgGln-553  
558-LysAsnSerLysAlaAsnThrSerLysArgValLysAsnGlyLysTrpThrPro-575  
g731  
**AMPHI Regions - AMPHI**  
17-AlaCysAlaValProGluAlaTyrAspGlyGly-27  
40-GlyProAspAspPheArgAlaPheSerCys-49

**Antigenic Index - Jameson-Wolf**

22-GluAlaTyrAspGlyGlyGlyArgGlyTyr-31  
33-ProProValGlnAsnGlnAlaGlyProAspAspPheArgAla-46  
48-SerCysGluAsnGlyLeu-53  
55-ValArgValArgAsnLeuAspGlyGlyLysIleAlaLeuArgLeuAspGlyArgArgAlaValLeuSerSerA  
spValAlaAlaSerGlyGluArgTyrThrAla-89  
92-GlyLeuPheGlyAsnGlyThrGluTrpHisGlnLysGlyGlyGluAla-107  
113-AspAlaTyrGlyAsnSerValGluThrSerCysArgAlaArg-126

**Hydrophilic Regions - Hopp-Woods**

22-GluAlaTyrAspGlyGlyGly-28  
 39-AlaGlyProAspAspPheArg-45  
 55-ValArgValArgAsnLeuAspGlyGlyLysIleAlaLeuArgLeuAspGlyArgArgAlaValLeu-76  
 80-ValAlaAlaSerGlyGluArgTyrThrAla-89  
 100-TrpHisGlnLysGlyGlyGlu-106  
 119-ValGluThrSerCysArgAlaArg-126  
**g732**  
**AMPHI Regions - AMPHI**  
 14-LeuGlyAlaIleSer-18  
 43-ValGlnSerIleArgThrMetAlaGluValTyrGly-54  
 66-AspAlaAspLeuPheGluGlyAlaMetLysGlyMetVal-78  
 95-GluIleLysGluSerThrSerGly-102  
 115-AspGlyPheValLysValValSerProIleGluAsp-126  
 155-GluAlaValLysLysMet-160  
 183-ValAsnLeuThrArg-187  
 214-GluArgThrValGluSerValAsnThrAlaAlaLys-225  
 283-LysAlaValProGluAspTyrValTyr-291  
 293-MetGlyGlyAspProLeuAlaGlyIleProAlaGluLeu-305  
 322-SerGluIleValAlaGly-327  
 400-LeuValGlyHisIleGlyAsn-406  
 446-ArgArgIleProAsnProAlaLysAsp-454  
 459-LysAlaLeuAspLeuValLysSerProGluGlnTrpGlnLysSerLeu-474

**Antigenic Index - Jameson-Wolf**

30-AlaAlaGluLysAspGlyArgAspAsnGluVal-40  
 59-AsnTyrTyrHisAspLysProAspAlaAspLeuPhe-70  
 82-AspProHisSerGluTyrMetAspLysLysGlyTyrAlaGluIleLysGluSerThrSerGlyGluPheGlyGly-106  
 111-IleGlyGlnGluAspGlyPhe-117  
 122-SerProIleGluAspThrProAlaGluArgAlaGluValLysSerGlyAspPhe-139  
 144-AspAsnValSerThrArgGlyMetThr-152  
 155-GluAlaValLysLysMetArgGlyLysProGlyThrLysIle-168  
 172-LeuSerArgLysAsnIlaAspLysProIle-181  
 199-LeuIleGluProAspTyrGlyTyr-206  
 211-GlnPheGlnGluArgThrValGlu-218  
 221-AsnThrAlaAlaLysGluLeuValLysGluAsnLysGlyLysProLeuLys-237  
 242-AspLeuArgAspAspProGlyGlyLeu-250  
 269-ValSerThrLysGlyArgAspGlyLysAspGlyMetVal-281  
 284-AlaValProGluAspTyr-289  
 293-MetGlyGlyAspPro-297  
 303-AlaGluLeuLysThr-307  
 316-SerGlySerAlaSerAla-321  
 330-GlnAspHisLysArgAlaVal-336  
 340-ThrGlnSerPheGlyLysGlySerVal-348  
 354-LeuSerAsnGlySer-358  
 368-TyrThrProAsnAspArgSerIleGln-376  
 384-ValGluValLysAspLysGluArgThrPheGluSerArgGluAlaAspLeu-400  
 405-GlyAsnProLeuGlyGlyGluAspValAsnSerGlu-416  
 421-ProLeuGluLysAspAlaAspLysProAlaAlaLysGluLysGlyLysLysLysAspGluAspLeuSerSerArgArgIleProAsnProAlaLysAspAspGlnLeuArgLysAlaLeuAspLeuValLysSerProGluGlnTrpGlnLys-472  
 477-AlaAlaLysLysProValSerAsnLysAspLysLysAspLysLys-491

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**Hydrophilic Regions - Hopp-Woods**

30-AlaAlaGluLysAspGlyArgAspAsnGluVal-40  
 60-TyrTyrHisAspLysProAspAlaAspLeuPhe-70  
 82-AspProHisSerGluTyrMetAspLysLysGlyTyrAlaGlutLeuLysGluSerThrSerGlyGlu-103  
 111-IleGlyGlnGluAspGlyPhe-117  
 122-SerProIleGluAspThrProAlaGluArgAlaGluValLysSerGlyAspPhe-139  
 144-AspAsnValSerThr-148  
 155-GluAlaValLysLysMetArgGlyLysProGlyThr-166  
 172-LeuSerArgLysAsnAlaAspLysProIle-181  
 211-GlnPheGlnGluArgThrValGlu-218  
 221-AsnThrAlaIleGluIleValLysGluAsnLysGlyLysProLeuLys-237  
 242-AspLeuArgAspAspProGly-248  
 271-ThrLysGlyArgAspGlyLysAspGlyMetVal-281  
 303-AlaGluLeuLysThr-307  
 330-GlnAspHisLysArgAlaVal-336  
 370-ProAsnAspArgSerIleGln-376  
 384-VailGluValLysAspLysGluArgThrPheGluSerArgGluAlaAspLeu-400  
 408-LeuGlyGluGluValAsnSer-415  
 421-ProLeuGluLysAspAlaAspLysProAlaAlaLysGluLysGlyLysLysLysAspGluAspLeuSer  
 SerArgArgIleProAsnProAlaLysAspAspGlnLeuArgLysAlaLeuAspLeuValLysSerProGluGlnT  
 rpGln-471  
 477-AlaAlaLysLysProValSerAsnLysAspLysLysAspLysLys-491  
**g733**  
**AMPHI Regions - AMPHI**  
 6-ThrLeuGlyArgLeuSer-11  
 16-ValLeuAlaLeuThrAla-21  
 33-TyrGlyGlyTyrProAspThrValTyrGluGly-43  
 53-LysGlnThrGluLysMetGluLysTyrPheAlaGluAlaAlaAlaAsn-67  
 92-GlyAlaPheArgGlnPheGluGlu-99

**Antigenic Index - Jameson-Wolf**

2-MetAsnProLysThrLeuGly-8  
 23-AlaGlyGlyGlyHisLys-28  
 32-TyrTyrGlyGlyTyrProAspThrValTyrGluGlyLeuLysAsnAspAspAspThrSerLeuGlyLysGlnThrG  
 luLysMetGluLysTyrPhe-62  
 65-AlaAlaAsnLysLysMetAsnAlaAlaProGlyAla-76  
 84-LeuSerArgSerGlyAspLysGluGlyAlaPheArgGlnPheGluGluGluLysArgLeuPheProGlu-106  
 115-MetLysThrGlyLysGlyLysArg-123

**Hydrophilic Regions - Hopp-Woods**

40-ValTyrGluGlyLeuLysAsnAspAspThrSerLeuGlyLysGlnThrGluLysMetGluLysTyrPhe-62  
 65-AlaAlaAsnLysLysMetAsnAla-72  
 86-ArgSerGlyAspLysGluGlyAlaPheArgGlnPheGluGluGluLysArgLeuPhePro-105  
 115-MetLysThrGlyLysGlyGlyLysArg-123

**g734****AMPHI Regions - AMPHI**

26-TyrLeuAlaValTrpGlnAsnProGlnAspAlaAsnAspValLeuGlnVal-42  
 53-GluAlaPheAlaGluLeuGluAlaPheCysLys-63  
 77-ThrGlyCysArgSerValValSer-84  
 92-LeuAlaTyrProLysAlaLeuGlyAlaMetArg-102  
 113-ArgPheThrSerVal-117  
 121-AlaLeuAsnGlnCysIleLysLys-128

**Antigenic Index - Jameson-Wolf**

31-GlnAsnProGlnAspAlaAsnAspValLeuGln-41

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43-LysThrThrLysGluAspSerAlaLysSerGluAlaPheAlaGlu-57  
 60-AlaPheCysLysGlyGlnAspThr-67  
 71-IleAlaGluAspGluProThrGlyCysArgSer-81  
 101-MetArgValGluAsn-105  
 111-SerProArgPheThrSer-116  
 125-CysIleLysLysTyrGlyAlaGlnGly-133  
 145-SerSerTyrTyrGly-149

**Hydrophilic Regions - Hopp-Woods**

34-GlnAspAlaAsnAsp-38  
 43-LysThrThrLysGluAspSerAlaLysSerGluAlaPheAlaGlu-57  
 60-AlaPheCysLysGlyGlnAspThr-67  
 71-IleAlaGluAspGluProThrGlyCys-79  
 101-MetArgValGluAsn-105  
 125-CysIleLysLysTyrGlyAla-131  
 g736  
**AMPHI Regions - AMPHI**  
 13-GlyLeuIleGlnSerPheGlySer-20  
 50-GlyValLeuSerVal-54  
 61-GlyLeuPheValGly-65  
 70-LeuGlnGlyTyrThrGlnLeuSerLysPheLysSerAlaAspIle-84  
 93-LeuLeuArgGluLeuGlyProVal-100  
 120-LeuMetLysThrThrGlyGlnLeuGluAlaMetAsnValMet-133  
 135-ValAsnProValAlaArgValVal-142  
 144-ProArgPheTrpAlaGlyValPheSerMetPro-154  
 156-LeuAlaSerIlePheAsnValAlaGlyIlePheGlyAla-168  
 196-AspValIleAsnGlyLeu-201  
 230-LeuArgAlaSerThrArgThr-236

**Antigenic Index - Jameson-Wolf**

30-AlaLysSerGlyThrAlaPheAlaArgProArgLeuSerVal-43  
 77-SerLysPheLysSer-81  
 93-LeuLeuArgGluLeuGly-98  
 109-SerAlaGlyAlaMetThrSer-116  
 186-GlnMetGlnAsnAsn-190  
 224-ProThrSerGluGlyIleLeuArgAlaSerThr-234

**Hydrophilic Regions - Hopp-Woods**

37-AlaArgProArgLeuSerVal-43  
 77-SerLysPheLysSer-81  
 93-LeuLeuArgGluLeuGly-98  
 g737  
**AMPHI Regions - AMPHI**  
 56-AlaAlaTrpAlaArgValGlyGly-63

**Antigenic Index - Jameson-Wolf**

24-AlaHisHisAspGlyHisGlyAspAspAspHisGlyHis-36  
 38-AlaHisGlnHisGlyLysGlnAspLysIleIleSer-49  
 51-AlaGlnAlaGluLysAlaAla-57  
 60-ArgValGlyIleThrAspIleAspLeuGluHisAspAspGlyArgProHisTyrAspValGluIleValLysAsnGlyGlnGluTyr-90  
 94-ValAspAlaArgThrGlyArgValIleSerSerArgArgAspAsp-108

**Hydrophilic Regions - Hopp-Woods**

27-AspGlyHisGlyAspAspAspHisGlyHis-36

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40-GlnHisGlyLysGlnAspLysIleIleSer-49  
 51-AlaGlnAlaGluLysAlaAla-57  
 61-ValGlyGlyLysIleThrAspIleAspLeuGluHisAspAspGlyArgProHisTyr-79  
 82-GluIleValLysAsnGlyGlnGluTyr-90  
 94-ValAspAlaArgThrGlyArg-100  
 102-IleSerSerArgArgAspAsp-108  
**g738**

**AMPHI Regions - AMPHI**

91-LeuMetAsnLeuIleTyrProGlyMetAsnAspIleAla-103  
 139-IleGlySerLeuLeuGlnSerCysIle-147  
 201-LysIleProAlaAlaLeu-206  
 228-ThrTyrIleAlaAlaIleAlaLeuIle-236  
 271-AlaIleLeuGluThrPheThrGlyIle-279  
 285-ValGluArgValAlaAsnGlyGlyPheThrAspLeuProArgGlnSer-300  
 304-LysAlaLeuAlaAlaPheGlnSer-311  
 316-GlyHisGlyTrpAsnSerPheAla-323  
 338-AspAsnPheLeuSerThrLeuPheThr-346  
 353-LeuGlnLeuLeuAlaGlu-358  
 371-LeuLeuThrGlyIleAlaGlyLeuLeuLysArg-381  
 398-MetCysHisSerMetLeu-403  
 461-ArgLeuValAsnSerPheSerPro-468  
 472-AspSerAlaLysThrLeuAsnArgLys-480  
 482-AsnGluLeuArgTyrIleSer-488  
 507-LeuProGluTyrProGluThr-513  
 549-AlaLysGlnTrpMetArgAlaThr-556  
 567-TyrAlaAspGluIleArgLysLeuProVal-576  
 579-ProLeuLeuProGluLeuLeuLysAspCysLysAlaPheAlaAlaAlaPro-595

**Antigenic Index - Jameson-Wolf**

5-ThrThrValSerGlyAlaArgProAlaAla-14  
 37-ArgLeuLysProSerProAspPheTyr-45  
 62-AlaGlyLysLysLeuPheAsp-68  
 124-TyrGlyGlnGluArgIle-129  
 167-HisArgGlyGlnGly-171  
 176-IleGlyGlnArgAsnAsnLeuGly-183  
 196-LeuAsnGlyGlnArgLysIlePro-203  
 242-PheArgSerAspLysSerAsnArgArgThrMet-252  
 283-ThrAlaValGluArgValAlaAsnGlyGlyPheThrAspLeuProArgGlnSerGluTrpAsn-303  
 316-GlyHisGlyTrpAsnSerPheAla-323  
 335-ThrIleHisAspAsnPhe-340  
 378-LeuLeuLysArgSerLeuThrProAlaSer-387  
 424-ProAlaGluAlaSerAspGlyIleAlaPheLysLysAlaAla-437  
 467-SerProAlaAlaAspAspSerAlaLysThrLeuAsnArgLysIleAsnGlu-483  
 508-ProGluTyrProGluThrGlnThrTrpAlaGlu-518  
 525-LeuLysTyrArgProTyrSerAla-532  
 542-ArgGlnGlyLysValAlaGluAlaLysGlnTrpMet-553  
 555-AlaThrGlnSerTyr-559  
 566-ArgTyrAlaAspGluIleArgLys-573  
 584-LeuLeuLysAspCysLysAla-590  
 595-ProGlyHisProGluThrLysProCysLys-604

**Hydrophilic Regions - Hopp-Woods**

5-ThrThrValSerGlyAlaArgProAlaAla-14  
 38-LeuLysProSerPro-42  
 62-AlaLysLysLeuPheAsp-68

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125-GlyGlnGluArgIle-129  
 177-GlyGlnArgAsnAsn-181  
 198-GlyGlnArgLysIlePro-203  
 243-ArgSerAspLysSerAsnArgArgThrMet-252  
 283-ThrAlaValGluArgValAla-289  
 295-AspLeuProArgGlnSerGluTrpAsn-303  
 378-LeuLeuLysArgSerLeuThr-384  
 425-AlaGluAlaSerAsp-429  
 431-IleAlaPheLysLysIleAla-437  
 468-ProAlaAlaAspAspSerAlaLysThrLeuAsnArgLysIleAsnGlu-483  
 542-ArgGlnGlyLysValAlaGluAlaLysGlnTrpMet-553  
 566-ArgTyrAlaAspGluIleArgLys-573  
 584-LeuLeuLysAspCysLysAla-590  
 596-GlyHisProGluThrLysProCysLys-604  
**g739**

**AMPHI Regions - AMPHI**  
 6-AsnLysProPheArgLeu-11  
 53-HisThrAspSerPro-57  
 88-GlnProAspGlyThrGlu-93  
 116-AspAlaAlaArgAlaAlaAspSerLeuThrGlyThr-127  
 131-AlaGluAsnThrLeu-135

**Antigenic Index - Jameson-Wolf**  
 1-MetAlaLysProAsnLysProPheArgLeuThrPro-13  
 39-PheAsnProAsnGlyAspLysThrLeuGlnThrGluProGlnHisThrAspSerProArgGluThrGluPhe-62  
 64-LeuProAsnGlyAlaValGlnAspAlaAlaGlnProGluHisHisHis-80  
 82-AlaSerSerGluProAlaGlnProAspGlyThrGluGluSerGlySerGlyLeuProSerProAlaAlaProLysLysAsnArgValLysProArgProSerAspAlaAlaArgAlaAspSerLeuThrGlyThrGlyThrGlnAlaGluAsnThrLeuLysGluThrProVal-140  
 142-ProThrAsnAlaProHisProGluProArgLysGluThrProGluLysGlnAlaGlnProLysGluThrProLysGluThrProLysGluAsnHisThrLysProAspThrProLysAsnThrProAlaLysProHisLysGluIleLeu-193

**Hydrophilic Regions - Hopp-Woods**  
 1-MetAlaLysProAsnLysProPheArgLeu-11  
 41-ProAsnGlyAspLysThrLeuGlnThrGluProGlnHisThrAspSerProArgGluThrGlu-61  
 69-ValGlyGlnAspAlaAlaGlnProGluHisHisHis-80  
 82-AlaSerSerGluProAlaGlnProAspGlyThrGluGluSerGlySer-97  
 103-AlaAlaProLysLysAsnArgValLysProArgProSerAspAlaAlaArgAlaAspSerLeuThr-125  
 129-ThrGlnAlaGluAsnThrLeuLysGluThrPro-139  
 146-ProHisProGluProArgLysGluThrProGluLysGlnAlaGlnProLysGluThrProLysGluLysGluThrProLysGluAsnHisThrLysProAspThrProLysAsnThrProAlaLysProHisLysGluIleLeu-193  
**g740**  
**AMPHI Regions - AMPHI**  
 6-LeuValArgTrpLeuAlaVal-12  
 57-IleLysHisHisLeu-61

**Antigenic Index - Jameson-Wolf**  
 25-AlaAsnProProGluAspLysProGln-33  
 57-IleLysHisHisLeu-61  
 63-GlnGlyPheAspLeuLysArgGlnThr-71

**Hydrophilic Regions - Hopp-Woods**

27-ProProGluAspLysProGln-33

57-IleLysHisHisLeu-61

63-GlnGlyPheAspLeuLysArgGlnThr-71

**g741**

**AMPHI Regions - AMPHI**

35-GlyThrGlyLeuAlaAspAlaLeuThrAla-44

74-GlyAlaGluLysThrPheLysAlaGly-82

138-LysIleAsnAsnProAspLysIleAspSerLeuIle-149

164-ThrAlaPheAsnGlnLeuProAsp-171

205-IleGluHisLeuLys-209

**Antigenic Index - Jameson-Wolf**

1-ValAsnArgThrThrPhe-6

12-ThrAlaGlyProAspSerAspArgLeuGlnGlnArgArgGlyGlyGlyGlyVal-30

46-LeuAspHisLysAspLysGlyLeuLys-54

61-SerIleProGlnAsnGly-66

73-GlnGlyAlaGluLysThrPheLysAlaGlyGlyLysAspAsnSerLeuAsnThrGlyLysLeuLysAsnAspLysIleSerArg-100

107-IleGluValAspGlyGln-112

123-IleTyrLysGlnAspHisSerAla-130

135-ArgIleGluLysIleAsnAsnProAspLysIleAspSer-147

149-IleAsnGlnArgSer-153

157-SerAspLeuGlyGlyGluHisThr-164

168-GlnLeuProAspGlyLysAlaGluTyrHisGly-178

180-AlaPheSerSerAspAspAlaAspGlyLysLeu-190

196-PheAlaAlaLysGlnGlyHisGlyLysIleGluHisLeuLysThrProGluGlnAsnVal-215

218-AlaSerIleGluLeuLysAlaAspGluLysSerHis-229

234-GlyAspThrArgTyrGlyGlyGluGluLysGlyThrTyrArg-247

251-PheGlyAspArgAlaGlnGluIleAlaGly-260

265-LysIleGlyGluLysValHisGlu-272

274-GlyIleAlaAspLysGln-279

**Hydrophilic Regions - Hopp-Woods**

13-AlaGlyProAspSerAspArgLeuGlnGlnArgArgGlyGlyGly-27

46-LeuAspHisLysAspLysGlyLeuLys-54

73-GlnGlyAlaGluLysThrPheLysAlaGlyGlyLysAspAsnSerLeuAsn-89

91-GlyLysLeuLysAsnAspLysIleSerArg-100

107-IleGluValAspGly-111

135-ArgIleGluLysIleAsnAsnProAspLysIleAspSer-147

170-ProAspGlyLysIleGluTyrHisGly-178

180-AlaPheSerSerAspAspAlaAspGlyLysLeu-190

200-GlnGlyHisGlyLysIleGluHisLeuLysThrProGluGlnAsnVal-215

218-AlaSerIleGluLeuLysAlaAspGluLysSerHis-229

236-ThrArgTyrGlyGlyGluGluLysGlyThrTyr-246

252-GlyAspArgAlaGlnGluIleAlaGly-260

265-LysIleGlyGluLysValHisGlu-272

274-GlyIleAlaAspLysGln-279

**g746**

**AMPHI Regions - AMPHI**

83-ThrAlaAlaAspLysProGlnAsp-90

105-SerGluProGluAsn-109

126-IleLysGlyLeuGluGluSerGluLysLeuGlnGlnAlaGlu-139

154-GluLysValSerAlaThr-159

164-AspThrValAlaValGlu-169

171-ProLysArgThrAlaGluPro-177

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181-LysAlaGluArgThr-185  
 195-ThrLysThrAlaGluLysValAlaAspLysProLys-206  
 221-SerAlaValLysGluAlaLysLysAlaAspLysAlaGluGly-234  
 249-GluThrAlaGlnLysThrAspLysAlaAspLysThrLysThrAlaGluLysSerGlyLysAla-27  
 1  
 301-SerThrIleThrGluIleMetThr-308  
 321-TyrLysAsnAlaArgAspAlaGluArgAspLeu-331

**Antigenic Index - Jameson-Wolf**

1-MetSerGluAsnLysGlnAsnGlu-8  
 14-GluGlnLeuLysArgArgAsnArgArgArgLeuValThr-26  
 42-LeuSerSerAspProAlaAspSerAsnProAlaProGlnAlaGlyGluThrGlyAlaThrGluSerGlnThrA  
 laAsnThrAlaGln-70  
 76-SerAlaAlaGluAlaAspLysProGlnAspLeuAlaGlyGluAspLysProSerAlaA  
 laAspSerGluIleSerGluProGluAsnVal-110  
 118-AsnAspArgLeuGluAspSerAsnIleLysGlyLeuGluGluSerGluLysLeuGlnGlnAlaGluThrAla  
 LysThrGluProLysGlnAlaLysGlnArgAlaAlaGluLysValSerAlaThrAlaAspSerThrAspThrValA  
 laValGluLysProLysArgThrAlaGluProGluProGlnLysAlaGluArgThrAlaGluAlaGluLysProLysAl  
 aLysGluThrLysThrAlaGluLysValAlaAspLysProLysThrAlaAlaGluLysThrLysProAspThrAla  
 LysSerAspSerAlaValLysGluAlaLysLysAlaAspLysAlaGluGlyLysLysThrAlaGluLysAspArgS  
 erAspGlyLysHisGluThrAlaGlnLysThrAspLysAlaAspLysThrLysThrAlaGluLysGluLysSe  
 rGlyLysAlaGlyLysLysAlaAla-276  
 280-GlyTyrAlaGluLysGluArgAlaLeuSerLeuGlnArgLysMetLysAlaAlaGlyIle-299  
 306-IleMetThrAspAsnGlyLysValTyrArgValLysSerSerAsnTyrLysAsnAlaArgAspAlaGluArg  
 AspLeuAsnLysLeuArgVal-336

**Hydrophilic Regions - Hopp-Woods**

1-MetSerGluAsnLysGlnAsnGlu-8  
 14-GluGlnLeuLysArgArgAsnArgArgArgLeuVal-25  
 42-LeuSerSerAspProAlaAspSerAsnPro-51  
 54-GlnAlaGlyGluThrGlyAlaThrGluSerGlnThr-65  
 76-SerAlaAlaGluAsnGlyGluThrAlaAlaAspLysProGlnAspLeuAlaGlyGluAspLysProSerAlaA  
 laAspSerGluIleSerGluProGluAsnVal-110  
 119-AspArgLeuGluAspSerAsnIleLysGlyLeuGluGluSerGluLysLeuGlnGlnAlaGluThrAlaLys  
 ThrGluProLysGlnAlaLysGlnArgAlaAlaGluLysValSerAlaThrAlaAspSerThrAsp-164  
 166-ValAlaValGluLysProLysArgThrAlaGluProLysProGlnLysAlaGluArgThrAlaGluAlaLys  
 ProLysAlaLysGluThrLysThrAlaGluLysValAlaAspLysProLysThrAlaAlaGluLysThrLysProA  
 spThrAlaAlaLysSerAspSerAlaValLysGluAlaLysLysAlaAspLysAlaGluGlyLysLysThrAlaGluLys  
 sAspArgSerAspGlyLysLysHisGluThrAlaGlnLysThrAspLysAlaAspLysThrLysThrAlaGluLys  
 GluLysSerGlyLysAlaGlyLysLysAlaAla-276  
 281-TyrAlaGluLysGluArgAlaLeuSerLeuGlnArgLysMetLysAlaAlaGlyIle-299  
 306-IleMetThrAspAsnGlyLysValTyrArgValLysSerSerAsnTyrLysAsnAlaArgAspAlaGluArg  
 AspLeuAsnLysLeuArgVal-336

g748

**AMPHI Regions - AMPHI**

22-GlyAlaIleGlyAlaIleGlyGly-29  
 37-GlyGluThrAlaGluArgThrAlaGluSerGlnHis-48  
 82-SerAlaLysGlnLeuGluAsnLeuPheArgThrLeu-93  
 155-LeuGlnGluMetArgAspPheProAsnAspLysLeuGlnLysSerTrp-170  
 188-GlnThrAlaIleArgAspIleLysHisThr-198  
 250-GlyValAlaAlaAsnSer-255  
 257-AspGluProGluTrp-261  
 268-GlnAlaValArgLeuIleArgArgPheValGluPheTrpAspArg-282  
 310-GlnProAspPheAlaLysAspProGlu-318  
 330-LeuAlaAsnProArgAspProGlu-337

390-LeuGluGluTyrIleSerProPhe-397

**Antigenic Index - Jameson-Wolf**

1-MetSerGlnAsnGlnProAlaGlnProThrLysArgAsnLeuPhe-15  
 30-TyrPheGlyGlyLysGlnGlyGluThrAlaGluArgThrAlaGluSerGlnHisSerProGlnAla-52  
 80-AlaGlnSerAlaLysGlnLeuGluAsn-88  
 101-ThrGlnGlyGlyGluTyrGlnAspGlyAspAspAspLysLeuProSerAlaGlySerGly-119  
 125-PheAsnProAspGlyLeuThr-131  
 139-SerLeuPheAspGlyArgPheGlyLeuLysAspLysLysThrValHis-154  
 156-GlnGluMetArgAspPheProAsnAspLysLeuGlnLysSerTrpCysAspGlyAspLeuSer-176  
 183-ThrProGluThrCys-187  
 208-IlePheAspGlyTrpGlnProLysserGluProGlyAlaMetAla-221  
 226-LeuGlyPheArgAspGlyThrGlyAsnProLysValSerAspProLysThrAlaAspGlu-245  
 255-SerLeuAspGluProGluTrpAlaLysAsnGlySerTyrGlnAla-269  
 271-ArgLeuIleArgArgPhe-276  
 279-PheTrpAspArgThrProLeuGlnGluGlnThrAspIlePheGlyArgArgLysTyrSerGlyAlaProMet  
 AspGlyLysGluAlaAspGlnProAspPheAlaLysAspProGluGlyAspIleThrProLysAspSerHisM  
 etArgLeuAlaAsnProArgAspProGluPheLeuLys-340  
 348-AlaTyrSerTyrSerArgGlyProAlaSerSerGlyGlnLeu-361  
 385-LeuAsnGlyGluProLeuGluGluTyr-393  
 407-GlyValGlyLysGlyGlyPhe-413

**Hydrophilic Regions - Hopp-Woods**

8-GlnProThrLysArgAsnLeuPhe-15  
 32-GlyGlyLysGlnGlyGluThrAlaGluArgThrAlaGluSerGlnHis-48  
 80-AlaGlnSerAlaLysGlnLeuGluAsn-88  
 104-GlyGluTyrGlnAspGlyAspAspLysLeuProSer-115  
 145-PheGlyLeuLysAspLysLysThrValHis-154  
 156-GlnGluMetArgAspPheProAsnAspLysLeuGlnLysSerTrpCysAspGlyAspLeu-175  
 211-TrpGlnProLysserGluProGlyAlaMetAla-221  
 229-ArgAspGlyThrGlyAsnProLysValSerAspProLysThrAlaAsp-244  
 255-SerLeuAspGluProGluTrpAlaLys-263  
 271-ArgLeuIleArgArgPhe-276  
 283-ThrProLeuGlnGluGlnThrAspIlePheGlyArgArgLysTyrSer-298  
 301-ProMetAspGlyLysGluAlaAspGlnProAspPheAlaLysAspProGluGlyAspIleThrProLys  
 AspSerHisMet-328  
 331-AlaAsnProArgAspProGluPheLeuLys-340  
 353-ArgGlyProAlaSer-357  
 388-GluProLeuGluGluTyr-393

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**AMPHI Regions - AMPHI**

1-MetArgLysPheAsnLeuThrAlaLeuSerValMetLeuAlaLeuGlyLeuThrAlaCysGlnProProGluAl  
 aGluLysAlaAlaProAlaAlaSerGlyGluThrGlnSerAlaAsnGluGlyGlySerValGlyIleAlaValAsn  
 AspAsnAlaCysGluProMetAsnLeuThrValProSerGlyGlnValValPheAsnIleLysAsnAsnSerGlyA  
 rgLysLeuGluTrpGluIleLeuLysGlyValMetValValAspGluArgGluAsnIleAlaProGlyLeuSerAs  
 pLysMetThrValThrLeuLeuProGlyGluTyrGluMetThrCysGlyLeuLeuThrAsnProArgGlyLysLeu  
 ValValAlaAspSerGlyPheLysAspThrAlaAsnGluAlaAspLeuGluLysLeuProGlnProLeuAlaAspT  
 yrLysAlaTyrValGlnGluGluValLysGluLeuAlaAlaLysThrLysThrPheThrGluAlaValLysAlaG  
 lyAspIleGluLysAlaLysSerLeuPheAlaAlaThrArgValHisTyrGluArgIleGluProIleAlaGluLeu  
 PheSerGluLeuAspValIleAspAlaCysGluAspAspPheslAspGlyAlaLysAspAlaGlyPheThrG  
 lyPheHisArgIleGluHisAlaLeuTrpValGluLysAspValSerGlyValLysGluThzAlaAlaLysLeuMe  
 tThrAspValGluAlaLeuGlnLysGluIleAspAlaLeuAlaPheProProGlyLysValGlyGlyAlaSer  
 GluLeuIleGluGluAlaAlaGlySerLysIleSerGlyGluGluAspArgTyrSerHisThrAspLeuSerAspP  
 heGlnAlaAsnAlaAspGlySerLysLysIleValAspLeuPheArgProLeuIleGluAlaLysAsnLysAlaE  
 uLeuGluLysThrAspThrAsnPhiLysGlnValAsnGluIleLeuAlaLysTyrArgThrAspGlyPheGlu

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ThrTyrAspLysLeuSerGluAlaAspArgLysAlaLeuGlnAlaProIleAsnAlaLeuAlaGluAspLeuAlaGlnLeuArgGlyIleLeuGlyLeuLys-388

**Antigenic Index - Jameson-Wolf**

1-MetArgLysPheAsnLeuThrAlaLeuSerValMetLeuAlaLeuGlyLeuThrAlaCysGlnProProGluAlaGluLysAlaAlaProAlaAlaSerGlyGluThrGlnSerAlaAsnGluGlyGlySerValGlyIleAlaValAsnAspAsnAlaCysGluProMetAsnLeuThrValProSerGlyGlnValValPheAsnIleLysAsnAsnSerGlyArgLysLeuGluTrpGluIleLeuLysGlyValMetValValAspGluArgGluAsnIleAlaProGlyLeuSerAspLysMetThrValThrLeuLeuProGlyGluTyrGluMetThrCysGlyLeuLeuThrAsnProArgGlyLysLeuValValAlaAspSerGlyPheLysAspThrAlaAsnGluAlaAspLeuGluLysLeuProGlnProLeuAlaAspTyrlLysAlaTyrValGlnGlyGluValLysGluLeuAlaAlaLysThrLysThrPheThrGluAlaValLysAlaGlyAspIleGluLysAlaLysSerLeuPheAlaAlaThrArgValHisTyrGluArgIleGluProIleAlaGluLeuPheSerGluLeuAspProValIleAspAlaCysGluAspAspPheLysAspGlyAlaLysAspAlaGlyPheThrGlyPheHisArgIleGluHisAlaIleUrpValGluLysAspValSerGlyValLysGluThrAlaAlaLysLeuMetThrAspValGluAlaLeuGlnLysGluIleAspAlaLeuAlaPheProGlyLysValValGlyGlyAlaSerGluLeuIleGluGluAlaAlaGlySerLysIleSerGlyGluGluAspArgTyrSerHisThrAspLeuSerAspPhenGlnAlaAsnAlaAspGlySerLysIleValAspLeuPheArgProLeuIleGluAlaLysAsnLysAlaLeuLysLeuGluLysThrAspThrAsnPheLysGlnValAsnGluIleLeuAlaLysTyrArgThrLysAspGlyPheGluThrTyrAspLysLeuSerGluAlaAspArgLysAlaLeuGlnAlaProIleAsnAlaLeuAlaGluAspLeuAlaGlinLeuArgGlyIleLeuGlyLeuLys-388

**Hydrophilic Regions - Hopp-Woods**

1-MetArgLysPheAsnLeuThrAlaLeuSerValMetLeuAlaLeuGlyLeuThrAlaCysGlnProProGluAlaGluLysAlaAlaProAlaAlaSerGlyGluThrGlnSerAlaAsnGluGlyGlySerValGlyIleAlaValAsnAspAsnAlaCysGluProMetAsnLeuThrValProSerGlyGlnValValPheAsnIleLysAsnAsnSerGlyArgLysLeuGluTrpGluIleLeuLysGlyValMetValValAspGluArgGluAsnIleAlaProGlyLeuSerAspLysMetThrValThrLeuProGlyGluTyrGluMetThrCysGlyLeuLeuThrAsnProArgGlyLysLeuValValAlaAspSerGlyPheLysAspThrAlaAsnGluAlaAspLeuGluLysLeuProGlnProLeuAlaAspTyrlLysAlaTyrValGlnGlyGluValLysGluLeuAlaAlaLysThrLysThrPheThrGluAlaValLysAlaGlyAspIleGluLysAlaLysSerLeuPheAlaAlaThrArgValHisTyrGluArgIleGluProIleAlaGluLeuPheSerGluLeuAspProValIleAspAlaCysGluAspAspPheLysAspGlyAlaLysAspAlaGlyPheThrGlyPheHisArgIleGluHisAlaIleUrpValGluLysAspValSerGlyValLysGluThrAlaAlaLysLeuMetThrAspValGluAlaLeuGlnLysGluIleAspAlaLeuAlaPheProProGlyLysValValGlyGlyAlaSerGluLeuIleGluGluAlaAlaGlySerLysIleSerGlyGluGluAspArgTyrSerHisThrAspLeuSerAspPhenGlnAlaAsnAlaAspGlySerLysIleValAspLeuPheArgProLeuIleGluAlaLysAsnLysAlaLeuLysLeuGluLysThrAspThrAsnPheLysGlnValAsnGluIleLeuAlaLysTyrArgThrLysAspGlyPheGluThrTyrAspLysLeuSerGluAlaAspArgLysAlaLeuGlnAlaProIleAsnAlaLeuAlaGluAspLeuAlaGlinLeuArgGlyIleLeuGlyLeuLys-388

g750

**AMPHI Regions - AMPHI**

1-ValLysProArgPheTyrTrpAlaAlaCysAlaValLeuProAlaAlaCysSerProGluProAlaAlaGluLysThrValSerAlaAlaSerGlnAlaAlaAlaSerThrProValAlaThrLeuThrValProThrAlaArgGlyAspAlaValValProLysAsnProGluArgValAlaValTyrAspTrpAlaLeuAspThrLeuThrGluProGlyValAsnValGlyAlaThrAlaProValArgValAspTyrLeuGlnProAlaPheAspLysAlaAlaThrValGlyThrLeuPheGluProAspCysGluSerLeuHisArgHisAsnProGlnPheValIleThrGlyGlyProGlyAlaGluAlaTyrGluGlnLeuAlaLysAsnAlaThrThrIleAspLeuThrValAspAsnGlyAsnIleArgThrSerGlyGluLysGlnMetGluThrLeuSerArgIlePheGlyLysGluAlaArgValAlaLeuAsnAlaGlnIleAspAlaLeuPheAlaGlnLysArgGluAlaAlaLysGlyLysGlyArgGlyLeuValLeuSerValThrGlyAsnLysValSerAlaPheGlyThrGlnSerArgLeuAlaSerTrpIleHisGlyAspIleGlyLeuProProValAspGluSerLeuArgAsnGluGlyHisGlyProValSerPheGluTyrIleLysGluLysAsnAsnProGlyGlyTrpIlePheIleIleAspArgThrAlaAlaIleGlyGlnGluGlyProAlaAlaValGluValLeuAspAsnAlaLeuValCysGlyThrAsnAlaTrpLysArgLysGlnIleIleValMetProAlaAlaAsnTyrIleValAlaGlyGlyAlaArgGlnLeuIleGlnAlaAlaGluGlnLeuLysAlaAlaPheGluLysAlaGluProValAlaAlaGln-323

**Antigenic Index - Jameson-Wolf**

-902-

1-ValLysProArgPheTyrTrpAlaAlaCysAlaValLeuProAlaAlaCysSerProGluProAlaAlaGluLy  
sThrValSerAlaAlaSerGlnAlaAlaSerThrProValAlaThrLeuThrValProThrAlaArgGlyAspAla  
ValValProLysAsnProGluArgValAlaValTyrAspTrpAlaAlaLeuAspThrLeuThrGluProGlyValA  
snValGlyAlaThrAlaProValArgValAspTyrLeuGlnProAlaPheAspLysAlaAlaThrValGlyTh  
rLeuPheGluProAspCysGluSerLeuHisArgHisAsnProGlnPheValIleThrGlyGlyProGlyAlaGlu  
AlaTyrGluGlnLeuAlaLysAsnAlaThrThrIleAspLeuThrValAspAsnGlyAsnIleArgThrSerGlyG  
luLysGlnMetGluThrLeuSerArgIlePheGlyLysGluAlaArgValAlaGluLeuAsnAlaGlnIleAspAl  
aLeuPheAlaGlnLysArgGluAlaAlaLysGlyLysGlyLeuValLeuSerValThrGlyAsnLysVal  
SerAlaPheGlyThrGlnSerArgLeuAlaSerTrpIleHisGlyAspIleGlyLeuProProValAspGluSerL  
euArgAsnGluGlyHisGlyGlnProValSerPheGluTyrIleLysGluLysAsnProGlyTrpIlePheIleI  
eAspArgThrAlaAlaIleGlyGlnGluGlyProAlaAlaValGluValLeuAspAsnAlaLeuValCysGlyThr  
AsnAlaTrpLysArgLysGlnIleIleValMetProAlaAlaAsnTyrIleValAlaGlyGlyAlaArgGlnLeuI  
leGlnAlaAlaGluGlnLeuLysAlaAlaPheGluLysAlaGluProValAlaAlaGln-323

**Hydrophilic Regions - Hopp-Woods**

1-ValLysProArgPheTyrTrpAlaAlaCysAlaValLeuProAlaAlaCysSerProGluProAlaAlaGluLy  
sThrValSerAlaAlaSerGlnAlaAlaSerThrProValAlaThrLeuThrValProThrAlaArgGlyAspAla  
ValValProLysAsnProGluArgValAlaValTyrAspTrpAlaAlaLeuAspThrLeuThrGluProGlyValA  
snValGlyAlaThrAlaProValArgValAspTyrLeuGlnProAlaPheAspLysAlaAlaThrValGlyTh  
rLeuPheGluProAspCysGluSerLeuHisArgHisAsnProGlnPheValIleThrGlyGlyProGlyAlaGlu  
AlaTyrGlnLeuAlaLysAsnAlaThrThrIleAspLeuThrValAspAsnGlyAsnIleArgThrSerGlyG  
luLysGlnMetGluThrLeuSerArgIlePheGlyLysGluAlaArgValAlaGluLeuAsnAlaGlnIleAspAl  
aLeuPheAlaGlnLysArgGluAlaAlaLysGlyLysGlyArgGlyLeuValLeuSerValThrGlyAsnLysVal  
SerAlaPheGlyThrGlnSerArgLeuAlaSerTrpIleHisGlyAspIleGlyLeuProProValAspGluSerL  
euArgAsnGluGlyHisGlyGlnProValSerPheGluTyrIleLysGluLysAsnProGlyTrpIlePheIleI  
eAspArgThrAlaAlaIleGlyGlnGluGlyProAlaAlaValGluValLeuAspAsnAlaLeuValCysGlyThr  
AsnAlaTrpLysArgLysGlnIleIleValMetProAlaAlaAsnTyrIleValAlaGlyGlyAlaArgGlnLeuI  
leGlnAlaAlaGluGlnLeuLysAlaAlaPheGluLysAlaGluProValAlaAlaGln-323

g760

**AMPHI Regions - AMPHI**

1-AsnAsnArgAsnThrArgTyrAlaAlaLeuGlyLysArgValMetGluGlyValGluThrGluIleSerGlyAl  
alleThrProLysTrpGlnIleHisAlaGlyTyrSerTyrLeuHisSerGlnIleLysThrAlaAlaAsnProArg  
AspAspGlyIlePheLeuValProLysHisSerAlaAsnLeuTrpThrTyrGlnValThrProGlyLeuT  
hrValGlyGlyGlyValAsnAlaMetSerGlyIleThrSerAlaGlyMetHisAlaGlyGlyTyrAlaThrPh  
eAspAlaMetAlaAlaTyrArgPheThrProLysLeuLysLeuGlnIleAsnAlaAspAsnIlePheAsnArgHis  
TyrTyrAlaArgValGlyGlyThrAsnThrPheAsnIleProGlySerGluArgSerLeuThrAlaAsnLeuArgT  
yrSerPhe-154

**Antigenic Index - Jameson-Wolf**

1-AsnAsnArgAsnThrArgTyrAlaAlaLeuGlyLysArgValMetGluGlyValGluThrGluIleSerGlyAl  
alleThrProLysTrpGlnIleHisAlaGlyTyrSerTyrLeuHisSerGlnIleLysThrAlaAlaAsnProArg  
AspAspGlyIlePheLeuValProLysHisSerAlaAsnLeuTrpThrTyrGlnValThrProGlyLeuT  
hrValGlyGlyGlyValAsnAlaMetSerGlyIleThrSerAlaGlyMetHisAlaGlyGlyTyrAlaThrPh  
eAspAlaMetAlaAlaTyrArgPheThrProLysLeuLysLeuGlnIleAsnAlaAspAsnIlePheAsnArgHis  
TyrTyrAlaArgValGlyGlyThrAsnThrPheAsnIleProGlySerGluArgSerLeuThrAlaAsnLeuArgT  
yrSerPhe-154

**Hydrophilic Regions - Hopp-Woods**

1-AsnAsnArgAsnThrArgTyrAlaAlaLeuGlyLysArgValMetGluGlyValGluThrGluIleSerGlyAl  
alleThrProLysTrpGlnIleHisAlaGlyTyrSerTyrLeuHisSerGlnIleLysThrAlaAlaAsnProArg  
AspAspGlyIlePheLeuValProLysHisSerAlaAsnLeuTrpThrTyrGlnValThrProGlyLeuT  
hrValGlyGlyGlyValAsnAlaMetSerGlyIleThrSerAlaGlyMetHisAlaGlyGlyTyrAlaThrPh  
eAspAlaMetAlaAlaTyrArgPheThrProLysLeuLysLeuGlnIleAsnAlaAspAsnIlePheAsnArgHis  
TyrTyrAlaArgValGlyGlyThrAsnThrPheAsnIleProGlySerGluArgSerLeuThrAlaAsnLeuArgT  
yrSerPhe-154

-903-

**g767****AMPHI Regions - AMPHI**

41-GlyLysIleGluValLeuGluPhePheGlyTyrPheCysVal-54  
 89-GlyLeuAlaArgMetAlaAlaAlaValLys-98  
 140-LysLysLeuMetArgAlaTyrAspSerProGlu-150  
 160-LysLeuThrGluGlnTyr-165  
 187-PheAspGlyGlyValHisThrIleLysGluLeuValAla-199

**Antigenic Index - Jameson-Wolf**

23-ThrGluGlyGluAspTyrLeuVal-30  
 32-AspLysProIleProGlnGluGlnProGlyLysIleGluVal-45  
 66-LeuGlyLysAlaLeuProSerAspThrTyrLeuArg-77  
 99-LeuSerGlyLeuLysTyrGlnAla-106  
 115-TyrGluGlnLysIleArgLeuGluAsnArgAlaValAla-127  
 132-LeuSerGlnLysGlyPheAspGlyLysLysLeuMetArgAlaTyrAspSerProGluAla-151  
 157-LysMetGlnLysLeuThrGluGlnTyrGlyIleAspSerThrPro-171  
 175-ValGlyGlyLysTyrArgVal-181  
 183-PheAsnAsnGlyPheAspGlyGly-190  
 197-LeuValAlaLysValArgGluGluArgLysArgGlnThrProAlaValGlnLys-214

**Hydrophilic Regions - Hopp-Woods**

23-ThrGluGlyGluAsp-27  
 33-LysProIleProGlnGluGlnProGlyLysIleGluVal-45  
 115-TyrGluGlnLysIleArgLeuGluAsnArgAlaValAla-127  
 135-LysGlyPheAspGlyLysLysLeuMetArgAlaTyrAspSerProGluAla-151  
 157-LysMetGlnLysLeuThrGlu-163  
 197-LeuValAlaLysValArgGluGluArgLysArgGlnThrProAlaValGlnLys-214

**g768****AMPHI Regions - AMPHI**

1-MetAsnIleLysGlnLeuIleThrAlaAlaLeuIleAlaSerAlaAlaPheAlaThrGlnAlaAlaProGlnLy  
 sProValSerAlaAlaGlnThrAlaGlnHisSerAlaValTrpIleAspValArgSerGluGlnGluPheSerGlu  
 GlyHisLeuHisAsnAlaValAsnIleProValAspGlnIleValArgArgIleTyrGluAlaAlaProAspLysA  
 spThrProValAsnLeuTyrCysArgSerGlyArgArgAlaGluAlaAlaLeuGlnGluLeuLysLysAlaGlyTy  
 rThrAsnValAlaAsnHisGlyGlyTyrGluAspLeuLeuLysLysGlyMetLys-119

**Antigenic Index - Jameson-Wolf**

1-MetAsnIleLysGlnLeuIleThrAlaAlaLeuIleAlaSerAlaAlaPheAlaThrGlnAlaAlaProGlnLy  
 sProValSerAlaAlaGlnThrAlaGlnHisSerAlaValTrpIleAspValArgSerGluGlnGluPheSerGlu  
 GlyHisLeuHisAsnAlaValAsnIleProValAspGlnIleValArgArgIleTyrGluAlaAlaProAspLysA  
 spThrProValAsnLeuTyrCysArgSerGlyArgArgAlaGluAlaAlaLeuGlnGluLeuLysLysAlaGlyTy  
 rThrAsnValAlaAsnHisGlyGlyTyrGluAspLeuLeuLysLysGlyMetLys-119

**Hydrophilic Regions - Hopp-Woods**

1-MetAsnIleLysGlnLeuIleAlaSerAlaAlaPheAlaThrGlnAlaAlaProGlnLy  
 sProValSerAlaAlaGlnThrAlaGlnHisSerAlaValTrpIleAspValArgSerGluGlnGluPheSerGlu  
 GlyHisLeuHisAsnAlaValAsnIleProValAspGlnIleValArgArgIleTyrGluAlaAlaProAspLysA  
 spThrProValAsnLeuTyrCysArgSerGlyArgArgAlaGluAlaAlaLeuGlnGluLeuLysLysAlaGlyTy  
 rThrAsnValAlaAsnHisGlyGlyTyrGluAspLeuLeuLysLysGlyMetLys-119

**g769****AMPHI Regions - AMPHI**

1-LeuIleMetValPheTyrPheTyrPheCysGlyLysThrPheMetProAlaArgAsnArgTrpMetLeuLe  
 uProLeuLeuAlaSerAlaAlaTyrAlaGluGluThrProCysGluProAspLeuArgSerArgProGluPheArg  
 LeuHisGluAlaGluValLysProIleAspArgGluLysValProGlyGlnValArgGluLysGlyLysValLeuG  
 lnValAspGlyGluThrLeuLeuLysAsnProGluLeuLeuSerArgAlaMetTyrSerAlaValValSerAsnAs  
 nIleAlaGlyIleArgValIleLeuProIleTyrLeuGlnGlnAlaArgGlnAspLysMetLeuAlaLeuTyrAla

GlnGlyIleLeuAlaGlnAlaGluGlyArgValLysGluAlaValSerHisTyrArgGluLeuIleAlaAlaGlnP  
roAspAlaProAlaValArgMetArgLeuAlaAlaAlaLeuPheGluAspArgGlnAsnGluAlaAlaAlaAspGlnPheAspArgLeuLysThrGluAspLeuProProGlnLeuMetGluGlnValGluLeuTyrArgLysAlaLeuArgGluArgAspAlaTrpLysValAsnGlyGlyPheSerValThrArgGluHisAsnIleAsnGlnAlaProLysGlnGlnGlyAsnTrpThrPheProLysGlnValAspGlyThrAlaValAsnTyrArgPheGlyAlaGluLysLyssTrpSerLeuLysAsnGlyTrpTyrThrThrAlaGlyGlyAspValSerGlyArgValTyrProGlyAsnLysLysPheAsnAspMetThrAlaGlyValSerGlyIleGlyPheAlaAspArgArgLysAspValGlyLeuAlaValPheHisGluArgArgThrTyrGlyAsnAspAlaTyrSerTyrAlaAsnGlyAlaArgLeuTyrPheAsnArgTrpGlnThrProArgTrpGlnThrLeuSerSerAlaGluTrpGlyArgLeuLysAsnThrArgArgAlaArgSerAspAsnThrHisLeuGlnIleSerAsnSerLeuValPheTyrArgAsnAlaArgGlnTyrTrpThrGlyGlyLeuAspPheTyrArgGluAsnProAlaAspArgGlyAspPheAsnArgTyrGlyLeuArgPheAlaTrpGlyGlnGluTrpGlyGlySerGlyLeuSerSerLeuPheArgLeuGlyValAlaLysArgHisTyrGluLysProGlyPhePheSerSerPheLysGlyGluArgArgArgAspLysGluSerAspThrSerLeuSerLeuTrpHisArgAlaLeuHisPheLysGlyIleThrProArgLeuThrLeuSerHisArgGluThrTrpSerAsnAspValPheAsnGluTyrGluLysAsnArgAlaPheValGluPheAsnLysThrPhe-491

#### **Antigenic Index - Jameson-Wolf**

1-LeuIleMetValIlePheTyrPheTyrPheCysGlyLysThrPheMetProAlaArgAsnArgTrpMetLeuLeuProLeuLeuAlaSerAlaAlaTyrAlaGluGluThrProCysGluProAspLeuArgSerArgProGluPheArgLeuHisGluAlaGluValLysProIleAspArgGluLysValProGlyGlnValArgGluLysGlyLysValLeuGlnValAspGlyGluThrLeuLeuLysAsnProGluLeuLeuSerArgAlaMetTyrSerAlaValSerAsnAsnIleAlaGlyIleArgValIleLeuProIleTyrLeuGlnGlnAlaArgGlnAspLysMetLeuAlaLeuTyrAlaGlnGlyIleLeuAlaGlnAlaGluGlyArgValLysGluAlaValSerHistYrArgGluLeuIleAlaAlaGlnProAspAlaProAlaValArgMetArgLeuAlaAlaAlaLeuPheGluAspArgGlnAsnGluAlaAlaAlaAspGlnPheAspArgLeuLysThrGluAspLeuProProGlnLeuMetGluGlnValGluLeuTyrArgLysAlaLeuArgGluArgAspAlaTrpLysValAsnGlyGlyPheSerValThrArgGluHisAsnIleAsnGlnAlaProLysGlnGlnGlyAsnTrpThrPheProLysGlnValAspGlyThrAlaValAsnTyrArgPheGlyAlaGluLysLyssTrpSerLeuLysAsnGlyTrpTyrThrThrAlaGlyGlyAspValSerGlyArgValTyrProGlyAsnLysLysPheAsnAspMetThrAlaGlyValSerGlyIleGlyPheAlaAspArgArgLysAspValGlyLeuAlaValPheHisGluArgArgThrTyrGlyAsnAlaTyrSerTyrAlaAsnGlyAlaArgLeuTyrPheAsnArgTrpGlnThrProArgTrpGlnThrLeuSerSerAlaGluTrpGlyArgLeuLysAsnThrArgArgAlaArgSerAspAsnThrHisLeuGlnIleSerAsnSerLeuValPheTyrArgAsnAlaArgGlnTyrTrpThrGlyGlyLeuAspPheTyrArgGluAsnProAlaAspArgGlyAspPheAsnArgTyrGlyLeuArgPheAlaTrpGlyGlnGluTrpGlyGlySerGlyLeuSerSerLeuPheArgLeuGlyValAlaLysArgHisTyrGluLysProGlyPhePheSerSerPheLysGlyGluArgArgArgAspLysGluSerAspThrSerLeuSerLeuTrpHisArgAlaLeuHisPheLysGlyIleThrProArgLeuThrLeuSerHisArgGluThrTrpSerAsnAspValPheAsnGluTyrGluLysAsnArgAlaPheValGluPheAsnLysThrPhe-491

#### **Hydrophilic Regions - Hopp-Woods**

1-LeuIleMetValIlePheTyrPheTyrPheCysGlyLysThrPheMetProAlaArgAsnArgTrpMetLeuLeuProLeuLeuAlaSerAlaAlaTyrAlaGluGluThrProCysGluProAspLeuArgSerArgProGluPheArgLeuHisGluAlaGluValLysProIleAspArgGluLysValProGlyGlnValArgGluLysGlyLysValLeuGlnValAspGlyGluThrLeuLeuLysAsnProGluLeuLeuSerArgAlaMetTyrSerAlaValSerAsnAsnIleAlaGlyIleArgValIleLeuProIleTyrLeuGlnGlnAlaArgGlnAspLysMetLeuAlaLeuTyrAlaGlnGlyIleLeuAlaGlnAlaGluGlyArgValLysGluAlaValSerHistYrArgGluLeuIleAlaAlaGlnProAspAlaProAlaValArgMetArgLeuAlaAlaAlaLeuPheGluAspArgGlnAsnGluAlaAlaAlaAspGlnPheAspArgLeuLysThrGluAspLeuProProGlnLeuMetGluGlnValGluLeuTyrArgLysAlaLeuArgGluArgAspAlaTrpLysValAsnGlyGlyPheSerValThrArgGluHisAsnIleAsnGlnAlaProLysGlnGlnGlyAsnTrpThrPheProLysGlnValAspGlyThrAlaValAsnTyrArgPheGlyAlaGluLysLyssTrpSerLeuLysAsnGlyTrpTyrThrThrAlaGlyGlyAspValSerGlyArgValTyrProGlyAsnLysLysPheAsnAspMetThrAlaGlyValSerGlyIleGlyPheAlaAspArgArgLysAspValGlyLeuAlaValPheHisGluArgArgThrTyrGlyAsnAspAlaTyrSerTyrAlaAsnGlyAlaArgLeuTyrPheAsnArgTrpGlnThrProArgTrpGlnThrLeuSerSerAlaGluTrpGlyArgLeuLysAsnThrArgArgAlaArgSerAspAsnThrHisLeuGlnIleSerAsnSerLeuValPheTyrArgAsnAlaArgGlnTyrTrpThrGlyGlyLeuAspPheTyrArgGluAsnProAlaAspArgGlyAspPheAsnArgTyrGlyLeuArgPheAlaTrpGlyGlnGluTr

-905-

pGlyGlySerGlyLeuSerSerLeuPheArgLeuGlyValAlaLysArgHisTyrGluLysProGlyPhePheSer  
SerPheLysGlyGluArgArgAspLysGluSerAspThrSerLeuSerLeuTrpHisArgAlaLeuHisPheL  
ysGlyIleThrProArgLeuThrLeuSerHisArgGluThrTrpSerAsnAspValPheAsnGluTyrGluLysAs  
nArgAlaPheValGluPheAsnLysThrPhe-491

g770

**AMPHI Regions - AMPHI**

1-MetAsnArgLeuLeuLeuLeuSerAlaAlaValLeuProThrAlaCysGlySerGlyGluThrAspLysIleGl  
yArgAlaSerThrValPheAsnMetLeuGlyLysAsnAspArgIleGluValGluGlyPheAspAspProAspVal  
GlnGlyValAlaCysTyrIleSerTyrAlaLysLysGlyLeuLysGluMetValAsnLeuGluGluAspAlaS  
erAspAlaSerValSerCysValGlnThrAlaSerSerIleSerPheAspGluThrAlaValArgLysProLysGl  
uValPheLysArgGlyThrGlyPheAlaPheLysSerArgGlnIleValArgTyrTyrAspProLysArgLysAla  
PheAlaTyrLeuValTyrSerAspLysIleValGlnGlySerProLysAsnSerLeuSerAlaValSerCysPheG  
lySerGlyIleProGlnThrAspGlyValGlnAlaAspThrSerGlyLysLeuLeuAlaGlyAlaCysIleIleSe  
rAsnProIleLysAsnProAspLysArg-186

**Antigenic Index - Jameson-Wolf**

1-MetAsnArgLeuLeuLeuLeuSerAlaAlaValLeuProThrAlaCysGlySerGlyGluThrAspLysIleGl  
yArgAlaSerThrValPheAsnMetLeuGlyLysAsnAspArgIleGluValGluGlyPheAspAspProAspVal  
GlnGlyValAlaCysTyrIleSerTyrAlaLysLysGlyLeuLysGluMetValAsnLeuGluGluAspAlaS  
erAspAlaSerValSerCysValGlnThrAlaSerSerIleSerPheAspGluThrAlaValArgLysProLysGl  
uValPheLysArgGlyThrGlyPheAlaPheLysSerArgGlnIleValArgTyrTyrAspProLysArgLysAla  
PheAlaTyrLeuValTyrSerAspLysIleValGlnGlySerProLysAsnSerLeuSerAlaValSerCysPheG  
lySerGlyIleProGlnThrAspGlyValGlnAlaAspThrSerGlyLysLeuLeuAlaGlyAlaCysIleIleSe  
rAsnProIleLysAsnProAspLysArg-186

**Hydrophilic Regions - Hopp-Woods**

1-MetAsnArgLeuLeuLeuLeuSerAlaAlaValLeuProThrAlaCysGlySerGlyGluThrAspLysIleGl  
yArgAlaSerThrValPheAsnMetLeuGlyLysAsnAspArgIleGluValGluGlyPheAspAspProAspVal  
GlnGlyValAlaCysTyrIleSerTyrAlaLysLysGlyLeuLysGluMetValAsnLeuGluGluAspAlaS  
erAspAlaSerValSerCysValGlnThrAlaSerSerIleSerPheAspGluThrAlaValArgLysProLysGl  
uValPheLysArgGlyThrGlyPheAlaPheLysSerArgGlnIleValArgTyrTyrAspProLysArgLysAla  
PheAlaTyrLeuValTyrSerAspLysIleValGlnGlySerProLysAsnSerLeuSerAlaValSerCysPheG  
lySerGlyIleProGlnThrAspGlyValGlnAlaAspThrSerGlyLysLeuLeuAlaGlyAlaCysIleIleSe  
rAsnProIleLysAsnProAspLysArg-186

g771

**AMPHI Regions - AMPHI**

49-SerIleAlaHisThr-53  
133-IleGlnAspLeuPheAspGlyAla-140  
312-GlyIleAlaAsnIleGlyAsn-318  
358-LeuGlnAspThrValAspArgLeuPro-366  
369-ArgPheIleSerArgLeuAspGlySer-377  
391-AsnGlyThrPheAsp-395  
427-TyrLeuAspGluPheArg-432  
437-LysIlePheProAspIleLeuGlyArgLeuSerGly-448  
523-LeuGlnAspLeuPheGlyPheHis-530  
581-GlyLeuSerGlyLys-585  
601-IleSerAspGlyIleSerArgHisIleAspThr-611

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**Antigenic Index - Jameson-Wolf**

37-PheThrProGluAsnIleArgSerArgLeuGlnGln-48  
52-HisThrHisArgLysIleSerPhe-59  
61-AlaAspIleArgArgLeuLeuProArgProThrVal-73  
79-ThrIleThrGluProAspGlyGlyArg-87  
90-ValSerValLysGluThrLysIle-97

-906-

104-LeuTrpSerAspArgIleGlnVal-111  
 122-AlaLeuThrArgAspArgAsnGlyIlaTrp-131  
 135-AspLeuPheAspGlyAlaLysHisSerAlaSerValAsn-147  
 150-IleValGluAsnSerThrValArg-157  
 174-LeuGlnSerProAspSerSerGlyGlnGlnPheGluSerSerGly-188  
 197-ValProTrpLysSerArgGlyLeuPhe-205  
 208-AspGlyIleGlyThrProGluIleSerPro-217  
 222-AlaSerThrSerLeuAspGlyHisGly-230  
 235-ThrThrGlySerProSerValArgPheAsnAlaGlyGlyAlaAsp-249  
 255-LeuArgAlaAspThrSerPhe-261  
 275-LeuAsnAsnSerIleLysThrGlyThrVal-285  
 291-AlaGlyGlyGluItyrAlaArgTrpAspGlySerPheLysLeuAspLysAlaAsnLeu-309  
 317-GlyAsnAlaGluIleSerGlySerPheLysThrProArgLeuGln-331  
 342-TrpSerArgAspAsnLeuAspIleSerProArg-352  
 360-AspThrValAspArgLeuProGlnProArgPheIleSerArgLeuAspGlySerLeu-378  
 389-GluLeuAsnGlyThrPheAspArgGlnProVal-399  
 404-LysTyrThrArgGluGlyIlaProHisLeu-413  
 429-AspGluPheArgGlnGlnAsnGlyLysIle-438  
 443-LeuGlyArgLeuSerGlyAsnValGluAla-452  
 464-LeuGlnLeuAspAspMetGlu-470  
 473-LeuHisAlaAspLysAspHisIleAla-481  
 483-SerArgPheLysSerGlyLeuTyrGlyGlyHisThrGluGlyGlyIle-498  
 502-AsnThrArgProIleThrTyrArgLeuGlnGlnAsnAlaSerAsn-516  
 531-SerPheSerGlyAsnGlyAspAlaVal-539  
 543-ThrAlaSerGlyGluAsnArgLysGlnLeuIleArgSerLeuGlnGlySerLeu-560  
 564-IleSerAsnGlyAla-568  
 573-MetAspSerIleLeuLysAsnGlyLeuSerGlyLysIleSerGly-588  
 597-LeuAsnSerGluIleSerAspGlyIleSerArgHisIleAsp-610  
 623-AsnGlyTyrThrAsnLeuAspThrGlnGluLeuSerGlu-635  
 642-AlaValHisProLysAsnLysProIlePro-651  
 656-GlyThrValAspLysProSerIleThrValAspTyrGlyArgLeuThrGlyGlyIleAsnSerArgLysGlu  
 LysGlnIleLeuGlu-685  
 695-LeuLysProLysGluPro-700

**Hydrophilic Regions - Hopp-Woods**

40-GluAsnIleArgSerArgLeuGln-47  
 53-ThrHisArgLysIleSerPhe-59  
 61-AlaAspIleArgArgArgLeuLeuPro-69  
 81-ThrGluProAspGlyGlyArg-87  
 90-ValSerValLysGluThrIle-97  
 122-AlaLeuThrArgAspArgAsnGly-129  
 135-AspLeuPheAspGlyAlaLysHisSerAlaSer-145  
 175-GlnSerProAspSerSerGlyGlnGlnPheGlu-185  
 255-LeuArgAlaAspThrSerPhe-261  
 302-PheLysLeuAspLysAlaAsnLeu-309  
 325-PheLysThrProArgLeu-330  
 344-ArgAspAsnGlyLeuAspAlaProArg-352  
 360-AspThrValAspArgLeuProGln-367  
 370-PheIleSerArgLeuAspGly-376  
 392-GlyThrPheAspArgGlnProVal-399  
 404-LysTyrThrArgGluGlyAlaPro-411  
 429-AspGluPheArgGlnGlnAsn-435  
 465-GlnLeuAspAspMetGlu-470  
 473-LeuHisAlaAspLysAspHisIleAla-481  
 544-AlaSerGlyGluAsnArgLysGlnLeuIle-553

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600-GluIleSerAspGlyIleSerArgHisIleAsp-610  
 629-AspThrGlnIleLeuSerGlu-635  
 643-ValHisProLysAsnLysProIlePro-651  
 656-GlyThrValAspLysProSerIle-663  
 674-IleAsnSerArgLysGluLysGlnIleLeuGlu-685  
 696-LysProLysGluPro-700  
**g772**

**AMPHI Regions - AMPHI**

1-ValPheGlyThrValLeuArgThrAspAlaAspCysLeuGlnIleIleValValGlyLysPhePheGlnValVa  
 1AlaTyrGlyPheAlaIlaLeuAlaGluGlyGluPheHisGlnPheGlyGluMetIleGluIleValArgLeuAla  
 AspThrValPheHisAsnHisAlaHisHiSHisCysGlyIleAspPheArgArgGlyIleGluArgPheGlyArgH  
 isValAsnGlnGlnLeuHisIleGluIleLeuGlnHisHiSThrGlnAlaThrValValValAlaPheArgAr  
 gGlyAsnHisAlaLeuAspHisPhePheLeuGlnHisLysValHisIleGlyAspIleValArgHisLeuArgGln  
 PheGluGlnLysArgArgGlyAspValIleArgGlnValAlaAspPheLeuPheAlaAspAlaValGluIleL  
 ysLeuGlnHisValAlaPheValAsnHisGlnPheArgLysArgGlnArgPheGlnThrAlaTyrAspValAl  
 aValAspPheAspAsnValGlnAlaValGlnLeuPheArgGlnArgPheGlyAsnCysArgGlnThrArgAlaAsp  
 PheAsnHisAspIleIleArgLeuArgAlaHisGlyValAspAsnProArgValSerValGluThrProProPheArgAl  
 leLeuProGluThrLeuAlaGlyPheValPheHisArgValSerSerValGluThrProProPheArgAl  
 aAlaGlySerAspSerValTrpAlaGlyArgAsnProPheGlnIleArgThrThrHisArgAlaValLeuTyrVal  
 SerSerCysValLeuGluHisLysCysValTyrSerIleArgLeuMetSerAlaLeu-297

**Antigenic Index - Jameson-Wolf**

1-ValPheGlyThrValLeuArgThrAspAlaAspCysLeuGlnIleIleValValGlyLysPhePheGlnValVa  
 1AlaTyrGlyPheAlaIlaLeuAlaGluGlyGluPheHisGlnPheGlyGluMetIleGluIleValArgLeuAla  
 AspThrValPheHisAsnHisAlaHisHiSHisCysGlyIleAspPheArgArgGlyIleGluArgPheGlyArgH  
 isValAsnGlnGlnLeuHisIleGluIleLeuGlnHisHiSThrGlnAlaThrValValValAlaPheArgAr  
 gGlyAsnHisAlaLeuAspHisPhePheLeuGlnHisValHiSHisIleGlyAspIleValArgHisLeuArgGln  
 PheGluGlnLysArgArgGlyAspValIleArgGlnValAlaAspPheLeuPheAlaAspAlaValGluIleL  
 ysLeuGlnHisValAlaPheValAsnHisGlnPheIleArgLysArgGlnArgPheGlnThrAlaTyrAspValAl  
 aValAspPheAspAsnValGlnAlaValGlnLeuPheArgGlnArgPheGlyAsnCysArgGlnThrArgAlaAsp  
 PheAsnHisAspIleIleArgLeuArgAlaHisGlyValAspAsnProArgValLeuGlnLysI  
 leLeuProGluThrLeuAlaGlyPheValPheHisArgValSerSerValGluThrProProPheArgAl  
 aAlaGlySerAspSerValTrpAlaGlyArgAsnProPheGlnIleArgThrThrHisArgAlaValLeuTyrVal  
 SerSerCysValLeuGluHisLysCysValTyrSerIleArgLeuMetSerAlaLeu-297

**Hydrophilic Regions - Hopp-Woods**

1-ValPheGlyThrValLeuArgThrAspAlaAspCysLeuGlnIleIleValValGlyLysPhePheGlnValVa  
 1AlaTyrGlyPheAlaIlaLeuAlaGluGlyGluPheHisGlnPheGlyGluMetIleGluIleValArgLeuAla  
 AspThrValPheHisArgAsnHisAlaHisHiSHisCysGlyIleAspPheArgArgGlyIleGluArgPheGlyArgH  
 isValAsnGlnGlnLeuHisIleGluIleLeuGlnHisHiSThrGlnAlaThrValValValAlaPheArgAr  
 gGlyAsnHisAlaLeuAspHisPhePheLeuGlnHisValHiSHisIleGlyAspIleValArgHisLeuArgGln  
 PheGluGlnLysArgArgGlyAspValIleArgGlnValAlaAspPheLeuPheAlaAspAlaValGluIleL  
 ysLeuGlnHisValAlaPheValAsnHisGlnPheIleArgLysArgGlnArgPheGlnThrAlaTyrAspValAl  
 aValAspPheAspAsnValGlnAlaValGlnLeuPheArgGlnArgPheGlyAsnCysArgGlnThrArgAlaAsp  
 PheAsnHisAspIleIleArgLeuArgAlaHisGlyValAspAsnProArgValLeuGlnLysI  
 leLeuProGluThrLeuAlaGlyPheValPheHisArgValSerSerValGluThrProProPheArgAl  
 aAlaGlySerAspSerValTrpAlaGlyArgAsnProPheGlnIleArgThrThrHisArgAlaValLeuTyrVal  
 SerSerCysValLeuGluHisLysCysValTyrSerIleArgLeuMetSerAlaLeu-297

**g774****AMPHI Regions - AMPHI**

16-AlaSerCysAlaSerValLeu-22  
 61-ValArgLeuSerAsnGluVal-67  
 90-ValGlnLysLeuAsp-94  
 115-ValGluThrAlaGlnAsnLeuTyrAsnGlnAlaLeuLysHisTyrGlnAsnGly-132  
 170-CysGluSerValIleGluIle-176

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180-TyrAlaAsnArgPheLysAspSer-187  
 210-AlaArgAlaThrTrpArgSerLeuIleGlnThrTyrProGly-223

**Antigenic Index - Jameson-Wolf**

23-ProValProGluGlySerArgThrGluMetProThrGlnGluAsnAlaSerAspGlyIlePro-43  
 49-LeuGlnAspArgLeuAspTyrLeuGlu-57  
 59-LysIleValArgLeuSerAsnGluValGluMetLeuAsnGlyLysValLysAlaLeuGluHisThrLysIleH  
 isProSerGlyArgThrTyrValGlnLysLeuAspAspArgLysLeuLysGlu-100  
 102-TyrLeuAsnThrGluGlyGlySerAla-110  
 125-AlaLeuLysHistYrGlnAsnGlyArgPhe-134  
 142-LysGlyAlaAspGlyAspGlyGlySerIleAlaGln-154  
 162-GlnSerArgAlaArgMetGlyAsnCys-170  
 176-IleGlyGlyArgTyrAlaAsnArgPheLysAspSerProThrAla-190  
 198-GlyGluCysGlnTyr-202  
 204-LeuGlnGlnLysAspIleAla-210  
 221-TyrProGlySerProAlaAlaLysArgAlaAlaAlaAlaValArgLysArg-237

**Hydrophilic Regions - Hopp-Woods**

25-ProGluGlySerArgThrGluMetProThrGlnGluAsnAlaSerAsp-40  
 49-LeuGlnAspArgLeuAspTyrLeuGlu-57  
 59-LysIleValArgLeuSerAsnGluValGluMetLeuAsnGlyLysValLysAlaLeuGluHisThrLysIleH  
 isProSerGly-86  
 89-TyrValGlnLysLeuAspAspArgLysLeuLysGlu-100  
 142-LysGlyAlaAspGlyGlyAspGlyGlySerIleAlaGln-154  
 163-SerArgAlaArgMetGlyAsn-169  
 180-TyrAlaAsnArgPheLysAspSerProThrAla-190  
 198-GlyGluCysGlnTyr-202  
 204-LeuGlnGlnLysAspIleAla-210  
 225-ProAlaAlaLysArgAlaAlaAlaAlaValArgLysArg-237

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**AMPHI Regions - AMPHI**

6-LeuGluAsnGlyThrHisSer-12  
 19-GluArgThrTyrProGluProCysHisGluCysLysTerTerLeuArgArgIle-36  
 43-AlaPheAlaGlnPheCys-48  
 68-ValGlyLysHisLeuArgLysPheArgArgPheArgArgArgGly-82  
 94-ValGlyLeuPheArgLeuAlaArgLeuPheHisValGlyAsnAspPheValAspArgPheLeuGlyPhePhe-  
 117  
 130-PheGlyHisPheAlaSer-135  
 153-GlyGluGluPheLeuGluThrValValGluAlaAlaGlyAsnValAlaArgHisPheAspValLeuAspLeu-  
 176  
 193-SerHisGlnAsnArgIle-198  
 230-HisGlnThrLeuGlyGlyAspAlaGly-238  
 242-ValGlnLeuHisPheGly-248  
 265-GlyLysProSerGlyGlyAsnGlyLeuGlyGlyLeuValAsn-278  
 311-AspGlyAlaAspValValAlaGlnMet-319

**Antigenic Index - Jameson-Wolf**

1-GlyTerProGluProLeuGluAsnGlyThrHisSerGluProThrGluMetAsxGluArgThrTyrProGluPr  
 oCysHisGluCysLysTerTerLeuArgArgIleArgGlyGlnCys-40  
 50-PheGlyValAspPheArgPheArgArgLysPhePhe-60  
 70-LysHisLeuArgLysPheArgArgPheArgArgGlyGluGlyLeuValAsn-86  
 88-PheLysGlnArgAla-92  
 105-ValGlyAsnAspPheValAsp-111  
 120-PheProLysArgAsnGlyIleAla-127  
 135-SerValGlnThrAspGlnGluPhe-142

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150-PheGlyGlnGlyGluGluPheLeu-157  
 163-AlaAlaGlyAsnVal-167  
 177-ValAlaProAspGlyAspPheValGly-185  
 189-GlnAsnValGlySerHisGlnAsnArgIleThrGlnThrHisPhe-204  
 233-LeuGlyGlyAspAlaGlyGlnAsnPro-241  
 261-VaIGluSerIlaGlyLysProSerGlyGlyAsnGly-272  
 289-ValValIleGlyGluGluGluGlyPhe-298  
 302-ValLeuArgArgAlaAspGlyGlyAlaAspGlyAlaAsp-314  
 319-MetArgGlyIlaGlyGlyTyrAlaGly-328  
 343-MetProSerGluArgGluLysMetArgArg-352  
 361-ProAlaAspAsnArg-365

**Hydrophilic Regions - Hopp-Woods**

1-GlyTerProGluPheLeuGluAsnGlyThrHisSerGluProThrGluMetAsxGluArgThrTyrPro-23  
 25-ProCysHisCysLysTerLeuArgArgIleArgGly-38  
 53-AspPheArgArgArgLysPhePhe-60  
 70-LysHisLeuArgLysPheArgArgPheArgArgGlyGluGly-84  
 121-ProLysArgAsnGly-125  
 137-GlnThrAspGlnGluPhe-142  
 152-GlnGlyGluGluPheLeu-157  
 177-ValAlaProAspGlyAspPheValGly-185  
 194-HisGlnAsnArgIleThrGlu-200  
 233-LeuGlyGlyAspAlaGlyGln-239  
 263-SerAlaGlyLysProSerGly-269  
 289-ValValIleGlyGluGluGluGlyPhe-298  
 302-ValLeuArgArgAlaAspGlyGlyAlaAspGlyAlaAsp-314  
 343-MetProSerGluArgGluLysMetArgArg-352

**g902****AMPHI Regions - AMPHI**

56-AlaValGlyHisPheAlaAspValProAla-65  
 77-LeuThrIleLysArgValHisGly-84  
 128-AspAlaValGlyGlyGly-133  
 190-PheGlyAspPheGlyAsp-195  
 216-AlaArgArgIleAsp-220  
 241-AspValAlaHisPheLeuGlyGlyAla-249  
 266-ArgArgIleArgHisLeuPheGlyVal-274  
 288-GlyLysIleThrAlaValGlnGlyPheSer-297  
 318-ArgProThrGluAlaAlaGluGlyPhe-326  
 334-ArgLysCysAspGlyValValAspLysIleThrAlaAspVal-347

**Antigenic Index - Jameson-Wolf**

1-MetProSerGluProGluArgArgHisGlyAsnThrAla-13  
 26-PheSerGlyLysProPheLysIleThrGly-35  
 38-ValValLeuArgArgArgIleValGln-46  
 72-AlaHisThrAspGlyLeuThrIleLysArgValHisGly-84  
 89-GlnAsnGlyGlySer-93  
 97-GlnThrGlnGlyArgArgXxxAsn-104  
 113-IleAlaGluLysProArgProAlaLeu-121  
 134-LeuPheGluAspGlyGlyGlyPheLeuArgArgSerAspValAlaValAspProGlyArgAspValGln-15  
 6  
 175-ArgAlaArgAlaProValAsnGlyLysGlyGlyAsn-186  
 192-AspPheGlyAspGlyGlyGln-198  
 210-PheGluGlyAsnGlyTyrAlaArgLeuAspHisArgLeuGlnAsnGlyGlyAsnGlnArgLeu-231  
 252-IleAspValAspAspLeuArgProGluSerAspValValThrArgArgIleArg-269  
 277-GlyAsnLeuHisGlyAsnAspAla-284

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296-PheSerGlyIleProGluArgArgIleAla-305  
 310-AlaHisArgProThrCysAlaLysArgProThrGluAlaAlaGlu-324  
 330-AlaArgHisArgArgLysCysAspGlyValValAspLysIleThrAla-345  
 347-ValHisAsnGlyProAlaPheGlnLysSerAla-357

**Hydrophilic Regions - Hopp-Woods**

1-Met ProSerGluProGluArgArgHisGlyAsn-11  
 29-LysProPheLysIleThrGly-35  
 38-ValValLeuArgArgArgIleValGln-46  
 77-LeuThrIleLysArgValHisGly-84  
 99-GlnGlyArgArgGlyArgXxxAsn-104  
 113-IleAlaGluLysProArgProAlaLeu-121  
 134-LeuPheGluAspGlyGlyGlyPheLeuArgArgSerAspValAlaValAspProGlyArgAspValGln-15  
 5  
 175-ArgAlaArgAlaProValAsnGlyLysGlyGlyAsn-186  
 214-GlyTyrAlaArgArgLeuAspHisArgLeuGlnAsn-225  
 252-IleAspValAspArgLeuArgProGluSerAspValValThrArgArgIleArg-269  
 299-IleProGluArgArgIleAla-305  
 313-ProThrCysAlaLysArgProThrGluAlaAlaGlu-324  
 330-AlaArgHisArgArgLysCysAspGlyValValAspLysIleThrAla-345  
**g904**

**AMPHI Regions - AMPHI**

1-MetMetGlnHisAsnArgPheAlaValGlyAlaGlyAspAspGlyAspArgArgAlaAlaAspPhePh  
 eAsnProPheGlnIleCysPheGlyIleGlyArgGlnCysValValAlaPheHisAlaAspSerArgPheAlaPro  
 AlaGlyHisGlyPheValAsnArgPheAlaGlyPheHisArgIleArgThrAlaArgGlnAspValGlyPheAlaA  
 laAlaTrpGlnPheValAlaAspAlaAspIleAspGlyPheAsnAlaValHisTyrIleGluPheGlyAsnAlaHi  
 sThrGlyAsnAlaValAspLeuAspGlyAlaPheGlnGlyIleLysProAlaAlaAlaArgAlaAla  
 sThrGlyAsnAlaValAspLeuAspGlyAlaPheGlnGlyIleLysProAlaAlaAlaArgAlaAla  
 GlyTyrArgThrGluPheValSerAlaLeuArgGlnIleArgIleGluAlaTyrPheValGluGlnPheGlyArgGluArgA  
 laArgThrAspAlaArgGlyIleGlyPheAspAspAlaGlnAsnIleIleGlnHisLeuArgThrTyrAlaArgAl  
 aCysArgSerArgAlaGlyGluThrValGlyArgGlyAsnValGlyValAspValGlyAsnH  
 ThrLeuArgAlaPheLysGlnGlnPhePheAlaValPheValGlyAsnAlaGlyHisValGlyAsnH  
 isArgArgAsnAlaArgArgAspPheAspAsnArgHisHisValPheArgPheAsnArgSerGlyValMetGl  
 nValLeuGluLeuAspValValIleGlyAspGlyIleGlnPhePheThrGlnPhePheArgMetGlnGlnIle  
 GlyGlyAlaAsnGlyAlaAlaCysHisPheValPheValGlyArgAlaAspAlaAlaAlaGlyArgAlaAspPheA  
 laPheAlaAlaArgCysPheAlaPheGlyLeuValGluArgAspValValArgGlnAspGlnArgAlaGlyArgArgAs  
 pPheGlnThrAlaPheAspValPheHisAlaCysArgValGlnLeuValAspPheAlaGlnGlnGlyPheGlyGly  
 AsnAspAsnAlaArgThrAspGluAlaIleGlnSerPheValGlnAspThrAlaArgAsnAlaGlnAsnGlyP  
 hePheAlaAlaAspGlnGlyMetAlaArgIleValAlaAlaGluAlaAlaAspAlaAlaGlyPhePheH  
 gGlnProValAsnAspPheThrPheThrLeuValAlaProLeuCysAlaAspTyrTyrAsnIlePheSerHisSer  
 HisIleThrTyrArgTyr-436

**Antigenic Index - Jameson-Wolf**

1-MetMetGlnHisAsnArgPheAlaValGlyAlaGlyAspAspGlyAspArgArgAlaAlaAspPhePh  
 eAsnProPheGlnIleCysPheGlyIleGlyArgGlnCysValValAlaPheHisAlaAspSerArgPheAlaPro  
 AlaGlyHisGlyPheValAsnArgPheAlaGlyPheHisArgIleArgThrAlaArgGlnAspValGlyPheAlaA  
 laAlaTrpGlnPheValAlaAspAlaAspIleAspGlyPheAsnAlaValHisTyrIleGluPheGlyAsnAlaHi  
 sThrGlyAsnAlaValAspLeuAspGlyAlaPheGlnGlyIleLysProAlaAlaAlaArgAlaAla  
 GlyTyrArgThrGluPheValSerAlaLeuArgGlnIleArgIleGluAlaTyrPheValGluGlnPheGlyArgGluArgA  
 laArgThrAspAlaArgGlyIleGlyPheAspAspAlaGlnAsnIleIleGlnHisLeuArgThrTyrAlaArgAl  
 aCysArgSerArgAlaGlyGluThrValGlyArgGlyAsnValGlyValSerAlaValValAspValGlnGlnArg  
 ThrLeuArgAlaPheLysGlnGlnPhePheAlaValPheValGlyAsnAlaGlyHisValGlyAsnH  
 isArgArgAsnAlaArgArgAspPheAspAsnArgHisHisValPheArgPheAsnArgSerGlyValMetGl  
 nValLeuGluLeuAspValValIleGlyAspGlyIleGlnPhePheThrGlnPhePheArgMetGlnGlnIle  
 GlyGlyAlaAsnGlyAlaAlaCysHisPheValPheValGlyArgAlaAspAlaAlaGlyArgAlaAspPheA  
 laPheAlaAlaArgCysPheAlaGlyLeuValGluArgAspValValArgGlnAspGlnArgAlaGlyArgArgAs

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pPheGlnThrAlaPheAspValPheHisAlaCysArgValGlnLeuValAspPheAlaGlnGlnGlyPheGlyGly  
 AsnAspAsnAlaArgThrAspGluAlaIleGlnSerPheValGlnAspThrAlaArgAsnGlnAlaGlnAsnGlyP  
 hePheAlaAlaAspAspGlnGlyMetAlaArgIleValAlaLeuGluAlaHisAspAlaAlaGlyPhePheAr  
 gGlnProValasnAspPheThrPheThrLeuValAlaProLeuCysAlaAspTyrTyrAsnIlePheSerHisSer  
 HisIleThrTyrArgTyr-436

**Hydrophilic Regions - Hopp-Woods**

1-MetMetGlnHisAsnArgPheHealaValGlyAlaGlyGlyAspAspGlyAspArgArgAlaAlaAspPhePh  
 eAsnProPheGlnIleCysPheGlyIleGlyArgGlnCysValValAlaPheHisAlaAspSerArgPheAlaPro  
 AlaGlyHisGlyPheValAsnArgPheAlaGlyPheHisArgIleArgThrAlaArgGlnAspValGlyPheAlaA  
 laAlaTrpGlnPheValAlaAspAlaAspGlyPheAsnAlaValHisTyrIleGluPheGlyAsnAlaHi  
 sThrGlyAsnAlaValAspLeuAspGlyAlaPheGlnGlyGlyIleLysProAlaAlaAlaArgAlaAla  
 GlyTyrArgThrGluPheValSerAlaLeuArgGlnThrCysAlaTyrPheValGluGlnPheGlyArgGluArgA  
 laArgThrAspAlaArgGlyIleGlyPheAspPheAlaGlnAsnIleIleGlnHisLeuArgThrTyrAlaArgAl  
 aCysArgSerArgAlaGlyGluThrValGlyArgGlyAsnGluGlyValSerAlaValAlaValSpValGlnArg  
 ThrLeuArgAlaPheLysGlnGlnPhePheAlaValPheValGlnHisAlaGlyHisValGlyAsnH  
 isArgArgAsnAlaArgArgPheAspAsnArgHisHisValPheArgPheAsnArgSerGlyValMetG  
 lValLeuGluLeuAspValValIleGlyLysAspGlyIleGlnPhePheThrGlnPhePheArgMetGlnGlnIle  
 GlyGlyAlaAsnGlyAlaAlaAlaCysHisPheValPheValGlyArgAlaAspAlaAlaAlaGlyArgAlaAspPheA  
 laPheAlaAlaArgCysPheAlaGlyLeuValGluArgAspValArgGlnAspGlnArgAlaGlyArgArgAs  
 pPheGlnThrAlaPheAspValPheHisAlaCysArgValGlnLeuValAspPheAlaGlnGlnPheGlyGly  
 AsnAspAsnAlaArgThrAspGluAlaIleGlnSerPheValGlnAspThrAlaArgAsnGlnAlaGlnAsnGlyP  
 hePheAlaAlaAspGlnGlyMetAlaArgIleValAlaLeuGluAlaHisAspAlaAlaGlyPhePheAr  
 gGlnProValAsnAspPheThrPheThrLeuValAlaProLeuCysAlaAspTyrTyrAsnIlePheSerHisSer  
 HisIleThrTyrArgTyr-436

**g907-2****AMPHI Regions - AMPHI**

6-LeuGluAsnGlyThrHisSer-12  
 19-GluArgThrTyrProGluProCysHisGluCysLysTerTerMetLysLysProThrAspThrLeuPro-41  
 74-AspAspValAlaSerValMetArgSer-82  
 98-LysGluGlyGluArgTrpLeuSerAlaMetSer-108  
 110-ArgLeuAlaArgPheValPro-116  
 161-GlyAlaArgGlyLeu-165  
 174-AsnTyrIleGlyLysProAlaHis-181  
 197-LeuArgHisTyrArgAlaLeuGluLysGlyAspIleValArgAlaLeuAlaArgPheAsnGly-217

**Antigenic Index - Jameson-Wolf**

1-GlyTerProGluProLeuGluAsnGlyThrHisSerGluProThrGluMetAsxGluArgThrTyrProGluPr  
 oCysHisGluCysLysTerTerMetLysLysProThrAspThrLeuPro-41  
 44-LeuGlnArgArgArgLeu-50  
 65-GlyAlaGlnArgGluGluThrLeuAlaAspAspValAlaSer-78  
 83-SerValGlySerValAsnProProArgLeuValPheAspAsnProLysGluGlyGluArgTrp-103  
 113-ArgPheValProAspGluGlyGluArgArgArgLeu-124  
 129-GlnTyrGluSerSerArgAlaGlyLeu-137  
 147-GluValGluSerAlaPhe-152  
 174-AsnTyrIleGlyLysProAlaHisAsn-182  
 187-ArgThrAsnLeuArgTyrGly-193  
 200-TyrArgAsnLeuGluLysGlyAspIleVal-209  
 216-AsnGlySerLeuGlySerAsnLysTyrProAsnAla-227  
 232-TrpArgAsnArgTrpGlnTrp-238

**Hydrophilic Regions - Hopp-Woods**

1-GlyTerProGluProLeuGluAsnGlyThrHisSerGluProThrGluMetAsxGluArgThrTyrPro-23  
 25-ProCysHisGluCysLysTerTerMetLysLysProThrAsp-38  
 44-LeuGlnArgArgArgLeuLeu-50

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65-GlyAlaGlnArgGluGluThrLeuAlaAspAspValAlaSer-78  
 92-LeuValPheAspAsnProLysGluGlyGluArgTrp-103

115-ValProAspGluGlyGluArgArgArgLeu-124

131-GluSerSerArgAlaGlyLeu-137

147-GluValGluSerAlaPhe-152

201-ArgAsnLeuGluLysGlyAspIleVal-209

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**AMPHI Regions - AMPHI**

24-ThrAlaAlaGluLeu-28

125-ThrAspCysTyrArgSerTyrAspValLeuAspValSerGluPheSerHisPheSer-143

**Antigenic Index - Jameson-Wolf**

1-LysSerArgLeuSerArgTyrLysGlnAsnLysLeu-12

30-GlyIleAsnLysAsnThrAla-36

49-GlnAsnGlyProHis-53

57-PheAspGlyGluValGluAlaAspGluSerTyrPheGlyGlyGlnArgLysGlyLysArgGlyArgGlyAlaAlaGlyLys-83

89-LeuLeuLysArgAsnGlyLysVal-96

113-IleArgGluGlnValLysProAspSerIleVal-123

125-ThrAspCysTyrArgSerTyrAsp-132

159-ArgThrThrLysProTyr-164

**Hydrophilic Regions - Hopp-Woods**

1-LysSerArgLeuSerArgTyrLysGlnAsnLys-11

57-PheAspGlyGluValGluAlaAspGluSerTyr-67

70-GlyGlnArgLysGlyLysArgGlyArgGlyAlaAlaGly-82

90-LeuLysArgAsnGlyLys-95

113-IleArgGluGlnValLysProAspSer-121

**g909**

**AMPHI Regions - AMPHI**

24-GlnAspGlySerGly-28

**Antigenic Index - Jameson-Wolf**

22-ThrTyrGlnAspGlySerGlyLysThrAlaValArgAlaLysCysSerThrGlyThrPro-41

45-GlnAspGlyArgGlySerLysLysValAspCysAspGluTyrGlyGlyGluArgArgAlaValLeuArgAsnGlnLysArgGlyLysProAlaThrArgArgAlaAlaThr-81

83-GlyLysProSerPheArgAlaArgAspGlyGlyGlyArgValAsnArgAlaGluThrGlyGluGlyLysArgSerAlaArg-109

**Hydrophilic Regions - Hopp-Woods**

23-TyrGlnAspGlySerGlyLysThrAlaValArgAlaLysCysSerThr-38

46-AspGlyArgGlySerLysLysValAspCysAspGluTyrGlyGlyGluArgArgAlaValLeuArgAsnGlnLysArgGlyLysProAlaThrArgArgAlaAlaThr-81

85-ProSerPheArgAlaArgAspGlyGlyGlyArgValAsnArgAlaGluThrGlyGluGlyLysArgSerAlaArg-109

**g910**

**AMPHI Regions - AMPHI**

22-SerAlaGluArgGlnIle-27

39-LysAlaValLysMetLeuGlu-45

69-AlaTyrLysAspGlyArg-74

**Antigenic Index - Jameson-Wolf**

19-AlaGlyAspSerAlaGluArgGlnIleTyrGlyAspProHisPheGluGlnAsnArgThrLysAlaValLysM

etLeuGluGlnArgGlyTyrGln-50

53-AspValAspAlaAspAspTyrTrpGlyLysProValLeuGlu-66

68-GluAlaTyrLysAspGlyArgGluTyrAsp-77

-913-

83-ProAspLeuLysIleIleLysGluGlnLeuAspArg-94

**Hydrophilic Regions - Hopp-Woods**

21-AspSerAlaGluArgGlnIleTyr-28

31-ProHisPheGluGlnAsnArgThrLysAlaValLysMetLeuGluGlnArgGly-48

53-AspValAspAlaAspAspTyrTrp-60

68-GluIalaTyrLysAspGlyArgGluTyrAsp-77

86-LysIleIleLysGluGlnLeuAspArg-94

**g911**

**AMPHI Regions - AMPHI**

6-LeuGluPheTrpValGlyLeuPhe-13

43-ValTyrAlaAspPheGlyAspIleGly-51

97-ValSerAlaGlnIle-101

118-GlyAspThrGluAsnLeuAla-124

140-AsnLeuIleGlyLysPheMetThrSerPhe-149

**Antigenic Index - Jameson-Wolf**

1-MetLysLysAsnIle-5

35-GlyGlySerAspLysThrTyr-41

48-GlyAspIleGlyGlyLeuLysValAsnAlaProValLys-60

74-LeuAspProLysSerTyrGlnAlaArgValArgLeuAspGlyLysTyrGlnPheSerSerAspVal-97

103-ThrSerGlyLeuLeuGly-108

115-GlnGlnGlyGlyAspThrGluAsn-122

149-PheAlaGluLysAsnAlaGluGlyGlyAsnAlaGluLysAlaAlaGlu-164

**Hydrophilic Regions - Hopp-Woods**

1-MetLysLysAsnIle-5

36-GlySerAspLysThr-40

74-LeuAspProLysSerTyrGlnAlaArgValArgLeuAspGly-89

116-GlnGlyGlyAspThrGluAsn-122

149-PheAlaGluLysAsnAlaGluGlyGlyAsnAlaGluLysAlaAlaGlu-164

**g912**

**AMPHI Regions -- AMPHI**

23-SerProAlaAspAlaValGlyGlnIle-31

63-AspPheGlnArgMetThrAlaLeuAlaValGlyAsnProTrpArgThrAlaSerAspAlaGlnLys-84

89-LysGluPheGlnThrLeu-94

169-TyrArgAsnGlnPheGlyGluIleIleLysAlaLysGlyIleAspGlyLeuIleAla-187

**Antigenic Index - Jameson-Wolf**

1-ValLysSerSer-5

23-SerProAlaAspAla-27

31-IleArgGlnAsnAlaThrGln-37

42-LeuLysSerGlyAspAlaAlaSerAlaArgProLysAlaGluAla-56

74-AsnProTrpArgThrAlaSerAspAlaGlnLysGlnAlaLeuAlaLysGluPhe-91

104-LeuLysPheLysAsn-108

112-AsnValLysAspAsnProIleValAsnLysGlyGlyLysGluIleValVal-128

134-IleProGlyGlnLysProValAsnMet-142

146-ThrTyrGlnSerGlyGlyLysTyrArgThr-155

169-TyrArgAsnGlnPhe-173

177-IleLysAlaLysGlyIleAsp-183

189-LeuLysAlaLysAsnGlyGlyLys-196

**Hydrophilic Regions - Hopp-Woods**

1-ValLysLysSerSer-5

-914-

31-IleArgGlnAsnAla-35  
 43-LysSerGlyAspAlaAlaSerAlaArgProLysAlaGluAla-56  
 78-ThrAlaSerAspAlaGlnLysGlnAlaLeuAlaLysGluPhe-91  
 104-LeuLysPheLysAsn-108  
 112-AsnValLysAspAsnProIleVal-119  
 121-LysGlyGlyLysGluIleValVal-128  
 177-IleLysAlaLysGlyIleAsp-183  
 189-LeuLysAlaLysAsnGlyGlyLys-196  
**g913**  
**AMPHI Regions - AMPHI**  
 22-GluThrArgProAlaAspProTyrGluGlyTyrAsnArgAlaValSerLysPheAsnAspGlnAla-43  
 53-ArgGlyTyrArgLysValThrProLys-61  
 66-GlyValSerAsnPhePheAsnAsnLeuArgAspValValSer-79  
 107-LeuGlyGlyIleAspIleAspIleAlaGly-115  
 151-ValargAspAlaLeuGlyThrGlyIleThrSerValTyr-163  
 193-AspLeuThrAspSerLeuAspGluAlaAla-202  
 240-LeuValGluSerAla-244  
 259-SerGluThrGlnAla-263

**Antigenic Index - Jameson-Wolf**  
 1-MetLysLysThrAla-5  
 21-AlaGluThrArgProAlaAspProTyrGluGlyTyrAsnArgAlaValSerLysPheAsnAspGlnAlaAspA  
 rgTyr-46  
 51-AlaAlaArgGlyTyrArgLysValThrProLysProValArgAla-65  
 87-LeuAspIleLysArgAlaSerGluAspLeuVal-97  
 117-GlyGlyValProAspAsnLysAsnThrLeuGlyAsp-128  
 132-SerTrpGlyTrpLysAsnSerAsn-139  
 149-SerThrValArgAspAlaLeu-155  
 163-TyrProProLysAsn-167  
 173-ProAlaGlyArgTrpGly-178  
 186-SerThrArgGluGlyLeuLeuAspLeuThrAspSerLeuAspGluAlaAlaIleAspLysTyrSerTyrThr  
 ArgAspLeuTyrMet-214  
 216-ValArgAlaArgGlnThrGlyAlaThrProAlaGluGlyThrGluAspAsnIleAspIleAspIleAspGlu  
 LeuValGluSerAlaGluThrGlyAlaAla-249  
 252-AlaValHisGluAspSerValSerGluThrGlnAlaGluAlaAlaGlyGluAlaGluThrGlnProGlyThr  
 GlnPro-277

**Hydrophilic Regions - Hopp-Woods**  
 1-MetLysLysThrAla-5  
 21-AlaGluThrArgProAlaAspProTyrGluGlyTyrAsn-33  
 35-AlaValSerLysPheAsnAspGlnAlaAsp-44  
 53-ArgGlyTyrArgLysValThrProLysProValArg-64  
 87-LeuAspIleLysArgAlaSerGluAspLeuVal-97  
 118-GlyValProAspAsnLysAsnThrLeu-126  
 150-ThrValArgAspAlaLeu-155  
 186-SerThrArgGluGlyLeuLeuAspLeuThrAspSerLeuAspGluAlaAlaIleAsp-204  
 216-ValArgAlaArgGlnThrGly-222  
 224-ThrProAlaGluGlyThrGluAspAsnIleAspIleAspIleAspGluLeuValGluSerAlaGluThrGly  
 AlaAla-249  
 252-AlaValHisGluAspSerValSerGluThrGlnAlaGluAlaAlaGlyGluAlaGluThrGlnPro-273  
**g914-2**  
**AMPHI Regions - AMPHI**  
 6-LeuGlyIleLeuThrAlaCysAlaAlaMet-15  
 17-AlaPheAlaAspArgIleSerAspLeu-25  
 65-PheGlnLysThrPheGlu-70

-915-

81-GlnLysValArgGlnAlaCys-87

**Antigenic Index - Jameson-Wolf**

18-PheAlaAspArgIleSerAspLeuGluAlaArgLeuAlaGlnLeuGluHisArgValAlaValLeuGluSerGlyGlyAsnThrValLys-47  
 50-LeuPheGlySerAsnSer-55  
 64-ProPheGlnLysThrPheGluAlaSerAspArgAsnGluGlyValAlaArgGlnLysValArgGlnAlaCysAsnArgGluThrSerAla-93  
 96-CysGlyAspGluAlaIleArgCysArgLysPheAsp-107

**Hydrophilic Regions - Hopp-Woods**

18-PheAlaAspArgIleSerAspLeuGluAlaArgLeuAlaGlnLeuGluHisArgValAlaVal-38  
 67-LysThrPheGluAlaSerAspArgAsnGluGlyValAlaArgGlnLysValArgGlnAlaCysAsnArgGluThrSer-92  
 96-CysGlyAspGluAlaIleArgCysArgLysPheAsp-107  
**g915**  
**AMPHI Regions - AMPHI**  
 8-IleValAlaValPheAlaLeuSerAla-16  
 31-IleSerAspArgSerVal-36  
 69-ValLysGlnMetPheGlyTyrThrLysLeuProGluGluProLysGlyIleArgValIleTyrValThrAspMetGlyAsnValThrAspTrpThr-100  
 139-GlnAlaGluLysPhe-143

**Antigenic Index - Jameson-Wolf**

16-AlaCysArgGlnAlaGluGluAlaProProLeuProProArgGlnIleSerAspArgSerValGlyHisTyrCysSerMetAsnLeuThrGluHisAsnGlyProLysAla-52  
 56-LeuAsnGlyLysProAspGlnProVal-64  
 75-TyrThrLysLeuProGluGluProLysGlyIle-85  
 92-AspMetGlyAsnValThrAspTrpThrAsnProAsnAlaAspThrGluTrpIleAspAlaLysLys-113  
 125-GlyMetGlyAlaGluAspAlaLeuProPheGlyAsnLysGluGlnAlaGluLysPheAlaLysAspLysGlyGlyLysValValGly-153  
 155-AspAspMetProAsp-159

**Hydrophilic Regions - Hopp-Woods**

18-ArgGlnAlaGluGluAlaProProLeu-27  
 30-GlnIleSerAspArgSerVal-36  
 46-GluHisAsnGlyProLys-51  
 58-GlyLysProAspGln-62  
 77-LysLeuProGluGluProLysGlyIle-85  
 103-AsnIlaAspThrGluTrpIleAspAlaLysLys-113  
 127-GlyAlaGluAspAlaLeu-132  
 135-GlyAsnLysGluGlnAlaGluLysPheAlaLysAspLysGlyGlyLys-150  
 155-AspAspMetProAsp-159  
**g917**

**AMPHI Regions - AMPHI**

6-ProLeuAlaValLeuThrAlaLeuLeuLeu-15  
 35-GlnAsnValLeuLysIleTyrAsnTrpSerGluTyrValAspProGluThrValAlaAsp-54  
 99-IleLysAlaGlyAlaTyrGlnLysIleAspLysSer-110  
 124-ArgLeuMetAspGlyValAsp-130  
 152-ArgValLysAlaLeu-157  
 188-AspSerAlaAlaGlu-192  
 206-AsnSerSerAsnThrGluAspIleArgGluAlaThr-217  
 292-AlaLysAsnValAlaAsnAlaHisLysTyrIleAsnAspPheLeuAsp-307  
 325-LysProAlaArgAspLeuMetGluAsp-333

**Antigenic Index - Jameson-Wolf**

18-CysGlyGlySerAspLysProProAlaGluLysProAlaProAlaGluAsnGlnAsnVal-37  
 44-SerGluTyrValAspProGluThrValAlaAspPheGluLysLysAsnGlyIleLysValThr-64  
 68-TyrAspSerAspGluThrLeuGluSerLysValLeuThrGlyLysSerGlyTyrAsp-86  
 102-GlyIalaTyrGlnLysIleAspLysSerMetIleProAsnTyrLysHisLeuAsnProGluMetMetArgLeu  
 MetAspGlyValAspProAspHisGluTyr-135  
 149-AsnThrGluArgValLysLysAlaLeuGlyThrAspLysLeuProAspAsnGln-166  
 171-PheAsnProGluTyr-175  
 179-LeuLysGlnCysGly-183  
 201-LeuGlyLysAsnProAsnSerSerAsnThrGluAspIleArgGluAlaThrAlaLeuLeuLysLysAsnArg  
 ProAsnIleLysArgPheThrSerSerGlyPheIle-236  
 238-AspLeuAlaArgGlyAspThr-244  
 255-AsnIleAlaLysArgArgAlaGluGluAlaGlyGlyLysGluLysIleArgValMetMetProLysGluGly  
 ValGly-280  
 287-ValIleProLysAspAlaLysAsnValAlaAsn-297  
 305-PheLeuAspProGluValSerAlaLysAsnGlyAsn-316  
 320-TyrAlaProSerSerLysProAlaArgAspLeuMetGluAspGluPheLysAsnAspAsnThrIlePhePro  
 SerGlyGluAspLeuLysAsn-350  
 368-GlnTrpGlnAspValLysAlaGlyLys-376

**Hydrophilic Regions - Hopp-Woods**

19-GlyGlySerAspLysProProAlaGluLysProAlaProAlaGluAsn-34  
 47-ValAspProGluThrValAlaAspPheGluLysLysAsnGlyIle-61  
 68-TyrAspSerAspGluThrLeuGluSerLysValLeuThr-80  
 105-GlnLysIleAspLysSerMet-111  
 121-GluMetMetArgLeuMetAspGlyValAspProAspHisGluTyr-135  
 149-AsnThrGluArgValLysLysAlaLeuGlyThrAspLysLeuProAspAsnGln-166  
 204-AsnProAsnSerSerAsnThrGluAspIleArgGluAlaThrAlaLeuLeuLysLysAsnArgProAsnIle  
 LysArgPheThr-231  
 238-AspLeuAlaArgGlyAspThr-244  
 255-AsnIleAlaLysArgArgAlaGluGluAlaGlyGlyLysGluLysIleArgValMetMetProLysGluGly  
 -278  
 290-LysAspAlaLysAsnValAlaAsn-297  
 305-PheLeuAspProGluValSerAlaLysAsn-314  
 322-ProSerSerLysProAlaArgAspLeuMetGluAspGluPheLysAsnAspAsn-339  
 344-SerGlyGluAspLeuLysAsn-350  
 370-GlnAspValLysAlaGlyLys-376  
 g919

**AMPHI Regions - AMPHI**

8-SerAlaLeuTyrGlyIleAlaAlaAlaIleLeu-18  
 24-AргSerIleGlnThrPheProGln-31  
 37-IleAsnGlyProAspArgProAlaGlyIleProAspProAlaGly-51  
 76-AspPheAlaLysSerLeuGln-82  
 98-GlnAspValCysAlaGlnAlaPheGlnThrProVal-109  
 118-PheGluArgTyrPheThr-123  
 133-LeuAlaGlyThrValThrGlyTyrTyrGlu-142  
 161-GlyIleProAspAspPheIleSerValPro-170  
 176-ArgGlyGlyLysAsnLeuValArgIleArgGln-186  
 191-SerGlyThrIleAspAsnAlaGlyGlyThr-200  
 308-GlnClyIleAlaTyrMetArgGlnAsnProGlnArgLeuAlaGluValLeu-325  
 348-AlaLeuGlyThrProLeuMetGlyGluTyrAlaGlyAlaIle-361  
 382-ArgLysAlaLeuAsnArg-387

**Antigenic Index - Jameson-Wolf**

1-MetLysLysHisLeuLeu-6

-917-

21-CysGlnSerArgSerIleGln-27  
 30-ProGlnProAspThr-34  
 36-ValIleAsnGlyProAspArgProAlaGlyIleProAspProAlaGly-51  
 76-AspPheAlaLysSerLeuGln-82  
 87-GlyCysAlaAsnLeuLysAsnArgGlnGlyTrpGln-98  
 113-GlnAlaLysArgPhePhe-118  
 121-TyrPheThrProTrp-125  
 143-ProValLeuLysGlyAspGlyArgArgThrGluArgAlaArg-156  
 161-GlyIleProAspAspPhelle-167  
 173-AlaGlyLeuArgGlyGlyLysAsnLeuValArgIleArgGlnThrGlyLysAsnSerGlyThrIleAspAsn  
 AlaGlyThrHis-201  
 215-ThrAlaIleLysGlyArgPheGluGlySerArgPheLeuProTyrHisThrArgAsnGlnIleAsnGlyGly  
 AlaLeuAspGlyLysAlaPro-245  
 250-AlaGluAspProValGlu-255  
 262-GlnGlySerGlyArgLeuLysThrProSerGlyLysTyrIleArg-276  
 278-GlyTyrAlaAspLysAsnGluHisPro-286  
 293-TyrMetAlaAspLysGlyTyrLeuLysLeuGlyGln-304  
 312-AlaTyrMetArgGlnAsnProGlnArgLeuAlaGlu-323  
 326-GlyGlnAsnProSer-330  
 337-LeuAlaGlySerGlyAsnGluGlyProVal-346  
 359-GlyAlaIleAspArgHisTyr-365  
 379-ProValThrArgLysAlaLeuAsn-386  
 393-AspThrGlySerAlaIleLysGlyAlaValArg-403  
 409-GlyTyrGlyAspGluAlaGlyGluLeuAlaGlyLysGlnLysThrThr-424  
 431-LeuProAsnGlyMetLysProGluTyrArgPro-441

**Hydrophilic Regions - Hopp-Woods**

1-MetLysLysHisIleLeuLeu-6  
 38-AsnGlyProAspArgProAlaGlyIleProAspProAlaGly-51  
 90-AsnLeuLysAsnArgGlnGlyTrp-97  
 144-ValLeuLysGlyAspGlyArgArgThrGluArgAlaArg-156  
 175-LeuArgGlyLysAsnLeuValArgIleArgGlnThrGlyLysAsnSerGlyThrIleAspAsnAlaGly  
 -198  
 215-ThrAlaIleLysGlyArgPheGluGly-223  
 239-AlaLeuAspGlyLysAla-244  
 250-AlaGluAspProVal-254  
 265-GlyArgLeuLysThrProSer-271  
 279-TyrAlaAspLysAsnGluHis-285  
 317-AsnProGlnArgLeuAlaGlu-323  
 337-LeuAlaGlySerGlyAsnGluGlyPro-345  
 380-ValThrArgLysAlaLeuAsn-386  
 393-AspThrGlySerAlaIle-398  
 412-AspGluAlaGlyGluLeuAlaGlyLysGlnLysThr-423  
 434-GlyMetLysProGluTyrArgPro-441  
**g920-2**

**AMPHI Regions - AMPHI**

43-GlyGluPheProGluLeuGluProIleAla-52  
 117-GlyIleLysGluMetProAsp-123  
 135-LysAsnIleValAsnVal-140  
 163-LeuAspAsnProAlaAsn-168  
 190-ThrValThrAlaThrPheAspGlyPheAspThrSerAspArgSerLys-205  
 212-GlnAlaPheSerAspSerThr-218

**Antigenic Index - Jameson-Wolf**

40-LeuGlyTyrGlyGluPheProGlu-47

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49-GluProIleAlaLysAspArgLeu-56  
 66-ValThrGluLysGlyLysGluAsnMetIle-75  
 77-ArgGlyThrTyrAsnTyrGlnTyrArgSerAsnArgProValLysAspGlySerTyr-95  
 104-ThrPheTrpSerLysAsnLysAlaGlyTrp-113  
 116-AlaGlyIleLysGluMetProAspAlaSerTyrCysGluGlnThrArgMetPheGlyLysAsnIleValAsn  
 ValGlyHisGluSerAlaAspThr-147  
 152-LysProValGlyGlnAsnLeuGlu-159  
 162-ProLeuAspAsnProAla-167  
 173-GluArgPheLysVal-177  
 181-PheArgGlyGluProLeuProAsnAla-189  
 194-ThrPheAspGlyPheAspThrSerAspArgSerLysThrHisLysThrGluAla-211  
 213-AlaPheSerAspSerThrAspAspLysGlyGluValAsp-225  
 237-AsnValGluHisLysThrAspPheProAspGlnSerValCysGlnLysGlnAlaAsnTyrSer-257

**Hydrophilic Regions - Hopp-Woods**

49-GluProIleAlaLysAspArgLeu-56  
 66-ValThrGluLysGlyLysGluAsnMetIle-75  
 85-ArgSerAsnArgProValLysAspGlySer-94  
 107-SerLysAsnLysAlaGlyTrp-113  
 116-AlaGlyIleLysGluMetProAsp-123  
 128-GluGlnThrArgMetPheGly-134  
 142-HisGluSerAlaAsp-146  
 173-GluArgPheLysVal-177  
 196-AspGlyPheAspThrSerAspArgSerLysThrHisLysThrGluAla-211  
 213-AlaPheSerAspSerThrAspAspLysGlyGluValAsp-225  
 237-AsnValGluHisLysThrAspPheProAsp-246  
 248-SerValcysGlnLys-252

**g921****AMPHI Regions - AMPHI**

12-AlaValLeuSerGlyCysGlnSerIleTyrValProThrLeuThrGluIleProValAsn-31  
 33-IleAsnThrValLysThr-38  
 51-HisTrpAlaAspValAlaLysIleSerAspGlu-61  
 72-GlyLysMetThrLysValGlnAlaAlaGlnTyrLeuAsnAsnPheArgLys-88  
 98-AspSerMetTyrGluIleTyrLeuArg-106  
 126-GluAsnAlaLeuArgGlyTrpGlnGlnArgTrp-136

**Antigenic Index - Jameson-Wolf**

36-ValLysThrGluAlaProAlaLysGlyPheArg-46  
 56-AlaLysIleSerAspGluAlaThrArg-64  
 72-GlyLysMetThrLys-76  
 84-AsnAsnPheArgLysArgLeuValGlyArgAsnAlaValAspAspSerMet-100  
 107-SerAlaValAspSerGlnArgGlyGluIleAsnThrGluGlnSerLysLeuTyr-124  
 128-AlaLeuArgGlyTrpGlnGlnArgTrpLysAsnMetAspAlaLysProAspAsnProAla-147

**Hydrophilic Regions - Hopp-Woods**

36-ValLysThrGluAlaProAlaLysGlyPheArg-46  
 56-AlaLysIleSerAspGluAlaThrArg-64  
 86-PheArgLysArgLeuValGly-92  
 94-AsnAlaValAspAspSerMet-100  
 107-SerAlaValAspSerGinArgGlyGluIleAsnThrGluGlnSerLysLeuTyr-124  
 136-TrpLysAsnMetAspAlaLysProAspAsn-145

**g922****AMPHI Regions - AMPHI**

16-LeuSerAlaCysThrAla-21  
 28-ArgAlaAsnGluAlaGlnAlaPro-35

-919-

66-ValArgArgPheValAspAsp-72  
 82-AlaGluTrpGlnAspPhePheAspLys-90  
 98-VallLysIleMetHis-102  
 138-AspAspValAlaGln-142  
 166-GlySerPheArgValAlaAspAlaLeu-174  
 190-LysGluLeuValGluLeuLeuLysLeuAla-199  
 216-AlaMetGlyMetPro-220  
 239-HisArgAspIleTrpGlyAsnValGlyAspValAlaAlaSerValAlaAsnTyrMetLysGlnHis-260  
 292-ArgThrValAlaAspLeuLysAlaTyr-300  
 329-TyrLeuGlyLeuAsnAsnPheTyrThr-337

**Antigenic Index - Jameson-Wolf**

1-MetGluLysArgLysIleLeu-7  
 22-MetGluAlaArgThrProArgAlaAsnGluAlaGlnAlaProArgAlaAspGluMetLysLysGluSerArgP  
 roAlaPhe-48  
 55-ValSerAspSerGlyPhe-60  
 64-AlaAsnValArgArgPheValAspAspGluValGlyLysGlyAspPheSerGln-81  
 101-MetHisArgProSerThrSerArgPro-109  
 114-ArgThrGlyAsnSerGlyArgAlaLysPheHisGly-125  
 127-ArgArgPheTyrAlaGluAsnArgAlaValIleAspAspAspValAlaGlnLysTyrGlyVal-146  
 157-IleGluThrAsnTyrGlyLysAsnThrGlySer-167  
 180-AspTyrProArgArgAlaGlyPhePhe-188  
 197-LysLeuAlaLysGluGluGlyGlyAsp-205  
 223-MetProSerSerTyrArgLysTrpAlaValAspTyrAspGlyAspGlyHisArgAspIle-242  
 260-HisGlyTrpArgThrGlyLysMet-268  
 275-AlaProGlyAlaAsp-279  
 284-IleGlyGluLysThrAlaLeu-290  
 304-ProGlyGluThrLeuAlaAspAspGluLysAlaVal-315  
 320-GluThrAlaProGly-324  
 351-ValArgAspIleAlaAsnSerLeuGlyGlyProGlyLeu-363

**Hydrophilic Regions - Hopp-Woods**

1-MetGluLysArgLysIleLeu-7  
 22-MetGluAlaArgThrProArgAlaAsnGluAlaGlnAlaProArgAlaAspGluMetLysLysGluSerArgP  
 roAlaPhe-48  
 64-AlaAsnValArgArgPheValAspAspGluValGlyLysGlyAspPheSerGln-81  
 116-GlyAsnSerGlyArgAlaLysPheHisGly-125  
 127-ArgArgPheTyrAlaGluAsnArgAlaValIleAspAspAspValAlaGln-142  
 160-AsnTyrGlyLysAsnThrGly-166  
 181-TyrProArgArgAlaGlyPhePhe-188  
 197-LysLeuAlaLysGluGluGlyGlyAsp-205  
 234-TyrAspGlyAspGlyHisArgAspIle-242  
 284-IleGlyGluLysThrAlaLeu-290  
 307-ThrLeuAlaAspAspGluLysAlaVal-315  
 351-ValArgAspIleAla-355

g923-2

**AMPHI Regions - AMPHI**

9-ProMetAlaCysAlaAlaPheLeu-16  
 26-LeuGlyAlaCysTyrAlaIleLeuSerLeuTyrAla-37  
 63-ProAlaLeuPheGlyGlyTrpThrGly-71

**Antigenic Index - Jameson-Wolf**

43-IleAspLysArgArgAlaValArgGlyLysArgArgIleProGluHisArgLeu-60  
 77-ArgMetPheArgHisLysThrAlaLysLysArgPhe-88

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**Hydrophilic Regions - Hopp-Woods**

43-IleAspLysArgArgAlaValArgGlyLysArgArgIleProGluHisArgLeu-60

77-ArgMetPheArgHisLysThrAlaLysLysArgPhe-88

**g925-1****AMPHI Regions - AMPHI**

115-LysCysGlyGlnThrAlaGln-121

154-PheAspGluLeuGlu-158

**Antigenic Index - Jameson-Wolf**

16-GlyCysGlyLysAspAlaGlyGlyTyrGluGlyTyrTrpArgGluLysSerAspLysLysGluGlyValIleAlaValLysLysGlyAsnTyrPhe-48

56-ThrGlyLysGluGluSerLeuLeuSerGluLysAspGlyAla-70

74-AsnThrGlyIleGly-78

80-IleProIleLysLeuSerAspAspGlyLysGluLeuTyrValGluArgArgTyrValLysThrAspAlaAlaMetLysAspLysIleIleAlaHisGlnLysLysCysGlyGlnThr-119

124-LeuAspAlaArgAsnAlaLeuProSerAsnGlnThrTyrGlnGlnArgGlnAlaAla-142

144-GluGlnLeuLysArgArgPheGluAlaGluPheAspGluLeuGluLysGluIleLysCysAsnGlyLysProThr-168

**Hydrophilic Regions - Hopp-Woods**

17-CysGlyLysAspAlaGlyGly-23

27-TyrTrpArgGluLysSerAspLysLysGluGlyValIleAlaValLysLysGly-45

56-ThrGlyLysGluGluSerLeuLeuLeuSerGluLysAspGlyAla-70

80-IleProIleLysLeuSerAspAspGlyLysGluLeuTyrValGluArgArgTyrValLysThrAspAlaAlaMetLysAspLysIleIleAlaHisGlnLysLysCysGlyGln-118

124-LeuAspAlaArgAsnAlaLeu-130

136-TyrGlnGlnArgGlnAlaAla-142

144-GluGlnLeuLysArgArgPheGluAlaGluPheAspGluLeuGluLysGluIleLysCysAsnGlyLys-166

6

**g926****AMPHI Regions - AMPHI**

29-ProSerGluHisIleSerSerPhe-36

72-LeuGlySerThrLeuGlyGln-78

98-AlaGluGlyThrGluAspLeuSerArgGln-107

**Antigenic Index - Jameson-Wolf**

19-LeuProGlnAsnAsnGluAsnLeuTrpGlnProSerGluHisIleSer-34

37-AlaAlaGluGlyArgLeuAlaValLysAlaGluGlyLysGlySerTyrAla-53

70-ThrProLeuGlySer-74

79-LeuCysGlnAspArgAspGlyAlaLeu-87

89-ValAspGlyLysGlyAsnValTyr-96

98-AlaGluGlyThrGluAspLeuSerArgGln-107

123-GluGlyArgArgValAlaGlyAlaProTyrArgIleArgSerAspGlyIleLeu-140

143-TyrGlyTrpThrIleGlyGlnAsnCysArgGlnTrpGly-155

157-SerProAsnValAlaThrGlu-163

**Hydrophilic Regions - Hopp-Woods**

37-AlaAlaGluGlyArgLeuAlaValLysAlaGluGlyLysGlySer-51

80-CysGlnAspArgAspGlyAlaLeu-87

89-ValAspGlyLysGly-93

99-GluGlyThrGluAspLeuSerArg-106

123-GluGlyArgArgValAla-128

132-TyrArgIleArgSerAspGlyIleLeu-140

**g927****AMPHI Regions - AMPHI**

-921-

13-LeuLeuThrAlaCys-17  
 48-SerTyrAspValThrArgTyrPheTyrLysGlu-58  
 120-LysGlyTrpGlnGinAlaLeuPro-127  
 145-AsnProLysGlnIleArgAspTrpAsnAspLeuAlaLysAspGly-159  
 195-LysLeuValAlaSerIleLeu-201

**Antigenic Index - Jameson-Wolf**  
 17-CysSerProAlaAlaAspSerAsnHisProSerGlyGlnAsnAlaProAlaAsnThrGluSerAspGlyLysAsnIle-42  
 65-GlyThrTyrGlnSerGluHisProGlyThrSer-75  
 81-SerHisGlyGlyPheSer-86  
 104-AsnGlnSerSerAspIleAspLeuLeuGluLysXxxGlyLeuVal-118  
 126-LeuPrcAspHisAlaAlaProTyrThr-134  
 142-ArgLysAsnAsnProLysGlnIleArgAspTrpAsnAspLeuAlaLysAspGlyVal-160  
 165-AlaLysThrSerGlyAsnGlyArg-172  
 183-LeuLysAlaAsnAsnGlyAsnGluGlnGluAlaGlnLys-195  
 201-LeuLysAsnThrProValPheGluAsnGlyGlyArgXxxProProProProSerHisAsnAlaThrSer-224  
 229-SerLeuLeuLysThrLysProThrThrSerAlaLysAsn-241

**Hydrophilic Regions - Hopp-Woods**  
 19-ProAlaAlaAspSerAsnHisProSer-27  
 33-AlaAsnThrGluSerAspGlyLysAsn-41  
 68-GlnSerGluHisProGly-73  
 105-GlnSerSerAspIleAspLeuLeuGluLysXxxGlyLeuVal-118  
 142-ArgLysAsnAsnProLysGlnIleArgAspTrpAsnAspLeuAlaLysAspGlyVal-160  
 167-ThrSerGlyAsnGly-171  
 185-AlaAsnAsnGlyAsnGluGlnGluAlaGlnLys-195  
 209-AsnGlyGlyArgXxxProProPro-216  
 231-LeuLysThrLysProThrThrSerAlaLysAsn-241

**g929**

**AMPHI Regions - AMPHI**  
 25-ValProAspGlyValLys-30  
 34-TyrThrLeuAlaMetPheValGlyValIleAlaAlaIleIleGly-49  
 53-ProLeuGlyAlaLeuSer-58  
 76-GlyAlaAlaMetSerAspAlaLeuSerAlaPhe-86  
 155-HisProIleMetGlnSerIleAlaGlySerTyrGlySerAsnProAlaLys-171  
 180-TyrLeuAlaLeuVal-184  
 187-HisSerAsnProIle-191  
 204-ProLeuIleValAsnLeuIleAlaGluAsnLeuGly-215  
 233-GlyValIleAlaPhePhe-238  
 265-ArgLeuSerGluMetGlyLys-271  
 280-AlaValIlePheGlyIle-285  
 355-LeuGlyLeuIleLysTrpPheSerGlyValLeuAlaGluSerValGlyGlyLeu-372  
 398-ThrAlaHisIleThrAlaMetPheGlyAlaPheLeuAla-410  
 452-TyrThrThrMetGlyGluTrpTrp-459  
 469-AsnPheLeuIlePheSerValIleGlySerIleTrpTrpLysValLeuGlyTyr-486

**Antigenic Index - Jameson-Wolf**  
 25-ValProAspGlyValLysProGln-32  
 71-ThrAlaAspLysProGlyAlaAlaMet-79  
 122-GlyArgLysThrLeuGlyIle-128  
 143-ThrProSerAsnThrAlaArgGlyGlyGly-152  
 163-GlySerTyrGlySerAsnProAlaLysGlyThrGluGlyLysMetGlyLys-179  
 187-HisSerAsnProIleSer-192

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213-AsnLeuGlySerSerPhe-218  
 248-TyrProProGluIleLysGluThrProAsn-257  
 261-PheAlaLysAspArgLeuSerGluMetGlyLysMetSerAlaAspGluIle-277  
 328-AspValLeuLysGluLysSerAlaTrp-336

**Hydrophilic Regions - Hopp-Woods**

71-ThrAlaAspLysProGlyAlaAlaMet-79  
 146-AsnThrAlaArgGly-150  
 168-AsnProAlaLysGlyThrGluGlyLysMetGlyLys-179  
 250-ProGluIleLysGluThrProAsn-257  
 261-PheAlaLysAspArgLeuSerGluMetGlyLysMetSerAlaAspGluIle-277  
 328-AspValLeuLysGluLysSerAlaTrp-336  
**g930-1**

**AMPHI Regions - AMPHI**

6-AlaGlyAspIleAsnGlnIleMetSerLeu-15  
 30-IleLeuAlaAlaPro-34  
 48-ProGlyTyrLeuArgSerIleArgIle-56  
 82-AspLeuLeuAsnLeuArgAsp-88  
 96-LeuLysCysLeuPro-100  
 163-SerAspMetPheTyr-167  
 171-GlyArgSerIleGlyGly-176  
 216-ArgTyrHisGlnAlaValSerGlyLeuSerGluValTyrAsp-229  
 283-TrpLeuAlaGluLeuSerHis-289  
 308-ThrGlyMetAspAlaLeuArgAlaProGluGluAlaPheGlyGluGly-324  
 355-HisAlaGlnTrpAsnLys-360  
 457-LeuLysLysProGluTyrPhe-463

**Antigenic Index - Jameson-Wolf**

1-GlyLysCysLeuHisAlaGlyAsp-8  
 34-ProGlnAspLeuAsnSerGlyLysLeu-42  
 54-IleArgIleAspArgSerAsnAspAspGlnThrHisAlaGlyArgIleAla-70  
 74-AsnLysPheProThrArgSerAsnAspLeuLeuAsn-85  
 87-ArgAspLeuGluGlnGlyLeuGluAsn-95  
 102-AlaGluAlaAspLeu-106  
 110-ProValGluArgGluProAsnGlnSerAsp-119  
 136-GlyMetAspAsnSerGlySerGluAlaThrGlyLysTyrGlnGly-150  
 156-AlaAspAsnProPheGlyLeu-162  
 170-TyrGlyArgSerIleGlyGlyThrProAspGluGluAsnPheAspGlyHisArgLysGluGlyGlySerAsn-193  
 212-HisAsnGlyTyrArg-216  
 226-GluValTyrAspTyrAsnGlyLysSerTyrAsnThrAspPheGlyPhe-241  
 245-LeuTyrArgAspAlaLysArgLysThrTyrLeu-255  
 260-TrpThrArgGluThrLysSerTyrIleAspAspAlaGluLeuThrValGlnArgArgLysThrThr-281  
 287-LeuSerHisLysGlyTyrIleGlyArgSerThrAlaAspPheLysLeuLysTyrLysHisGlyThrGlyMetLysAspAlaLeuArgAlaProGluGluAlaPheGlyGluGlyThrSerArg-327  
 334-SerAlaAspValAsnThrPro-340  
 357-GlnTrpAsnLysThrProLeuThrSerGlnAspLysLeuAla-370  
 375-HisThrValArgGlyPheAspGlyGluMetSerLeuProAlaGluArgGlyTrpTyrTrpArgAsnAspLeuSerTrpGlnPheLysProGlyHis-406  
 418-SerGlyGlnSerAlaLys-423  
 455-ArgAlaLeuLysLysProGluTyrPheGlnThrLysLysTrpValThr-470

**Hydrophilic Regions - Hopp-Woods**

35-GlnAspLeuAsnSerGlyLys-41  
 54-IleArgIleAspArgSerAsnAspGlnThrHisAla-66

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76-PheProThrArgSerAsnAsp-82  
 87-ArgAspLeuGluGlnGlyLeuGluAsn-95  
 102-AlaGluAlaAspLeu-106  
 110-ProValGluArgGluProAsnGlnSer-118  
 137-MetAspAsnSerGlySerGluAlaThrGlyLysTyr-148  
 174-IleGlyGlyThrProAspGluGluAsnPheAspGlyHisArgLysGluGlyGlySer-192  
 228-TyrAspTyrAsnGly-232  
 245-LeuTyrArgAspAlaLysArgLysThrTyrLeu-255  
 260-TrpThrArgGluThrLysSerTyrIleAspAspAlaGluLeuThrValGlnArgArgLysThrThr-281  
 296-SerThrAlaAspPhenylsLeuLysTyrLysHis-306  
 308-ThrGlyMetLysAspAlaLeuArgAlaProGluGluAlaPheGly-322  
 362-ProLeuThrSerGlnAspLysLeuAla-370  
 378-ArgGlyPheAspGlyGluMet-384  
 455-ArgAlaLeuLysLysProGluTyrPheGln-464  
**g931**  
**AMPHI Regions - AMPHI**  
 43-LysAlaSerLysThrValAlaAsnPheValArgTyrAlaArgLys-57  
 67-ArgValIleGlyGly-71  
 81-GluAspLeuValGlnLysAlaThrAspLysAla-91  
 93-AlaAsnGluSerGlyAsnGlyLeuLysAsnThrValGly-105  
 142-ThrValPheGlyArgValGluSerGlyMetAspThrValSerLysIleAlaArgValLysThrAlaThrArg  
 GlyPhe-167

**Antigenic Index - Jameson-Wolf**

1-MetLysProLysPhe-5  
 30-ThrAspMetGlyAsn-34  
 38-ValLeuAspGluSerLysAlaSerLysThr-47  
 54-TyrAlaArgLysGlyPheTyrAspAsn-62  
 75-GlnGlyAspGlyLeuThrGluAspLeuValGlnLysAlaThrAspLysAlaValAlaAsnGluSerGlyAsnG  
 lyLeuLysAsnThrVal-104  
 113-AlaAlaProAspSerAla-118  
 127-AlaAspAsnGlySerLeuAspTyrLysAsnGlyGlnTyrGly-140  
 145-GlyArgValGluSerGlyMetAspThrValSerLysIleAlaArgValLysThrAlaThrArgGlyPhe-16  
 7  
 176-ValLysIleArgArg-180

**Hydrophilic Regions - Hopp-Woods**

1-MetLysProLysPhe-5  
 30-ThrAspMetGlyAsn-34  
 38-ValLeuAspGluSerLysAlaSerLysThr-47  
 78-GlyLeuThrGluAspLeuValGlnLysAlaThrAspLysAlaValAlaAsnGluSerGlyAsnGlyLeu-100  
 113-AlaAlaProAspSerAla-118  
 130-GlySerLeuAspTyrLysAsn-136  
 145-GlyArgValGluSerGlyMetAspThrValSerLysIleAlaArgValLysThrAlaThr-164  
 176-ValLysIleArgArg-180  
**g933**

**AMPHI Regions - AMPHI**

26-ProAsnIleProAlaLeuPheProLysHisProPheAspProPheGluAsnIleAsnAsnSerLysLys-48  
 63-GlyPheAlaArgGly-67  
 78-GluLysProLeuArgGlnTyrPheLysAspCysValAsnThr-91  
 101-IleSerSerPheGlyAsn-106  
 135-ValGlyAsnTyrIleGluTrpLeu-142  
 145-ThrLeuAsnLysLeuThrGlyTrpGlnGluHisLeuTyrAlaGlyLeuAspProPheHisTyrIleGluVal  
 -168  
 264-AlaLeuAspAsnLeuLysHisLeuAspGlyHisGlnIleValLysValAsn-280

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309-GlyPhePheThrLys-313  
 356-TrpLeuArgValIleAspGlyHisSerAsn-365  
 374-ProValGluGlyTyrArgLysGly-381  
 431-AlaGlyValTyrAlaThrTrpHis-438  
 447-AlaTyrValAspSerTrpMetGlnTyrGln-456  
 474-LysGlyIleThrAlaSer-479  
 483-GlyTyrAsnAlaLeuLeuAla-489  
 555-GlnProPheValAlaVal-560  
 606-PheAsnArgGlnThrSer-611

**Antigenic Index - Jameson-Wolf**

1-LysLysLeuArgAspArgAsnSerGluTyrTrpLysGluGluThrTyrHisIleLysSerAsnGlyArgThrTy  
 rPro-26  
 33-ProLysHisProPheAspProPheGluAsnIleAsnAsnSerLysLysIleSerPheTyrAspLysGluTyrT  
 hrGluAspTyr-60  
 68-PheGlyValGluLysArgAsnGlyGluGluGluLysProLeuArg-82  
 88-CysValAsnThrGluAsnSerAsnAspAsnCysLysIleSerSer-103  
 112-IleLysSerAspIle-116  
 122-GlnIleLysAsnSerHisIleAsnSerGluIle-132  
 144-ProThrLeuAsnLysLeuThrGlyTrpGlnGlu-154  
 167-GluValThrAspAsnSerHis-173  
 189-SerLeuTrpLysProArgTrpAsnSerAsnIle-199  
 205-LysAsnAlaGluIleArgPheAsnThrLysAsnGluSerLeuLeuValLysGluAspTyrAlaGlyGlyAla  
 ArgPhe-230  
 234-TyrAspLeuLysAspLysValProGlu-242  
 248-PheGluLysAsnIleThrGlyThrSer-256  
 263-LysAlaLeuAspSerLeuLysHistidineGlyHisGlnIleValLysValAsnAspThrAlaAspLysAsp  
 AlaPheArgLeuSerSerLysTyrArgLys-296  
 303-LeuGlnGlnArgProGluGlyPhe-310  
 313-LysValGlnGluArgAspAspIle-320  
 337-ArgLeuAsnAspLysAsnSerAspIlePheAspArgThrLeuProArgLysGlyLeu-355  
 360-IleAspGlyHisSerAsnGlnTrpValGlnGlyLysThrAlaProValGluGlyTyrArgLysGlyVal-38  
 2  
 392-GlnAsnGluSerAsnGlnLeu-398  
 403-MetGlyGlyGlnIlaGluGlnArgSerThrPheArgAsnProAspThrAspAsnLeuThr-422  
 424-GlyAsnValLysGly-428  
 440-LeuGlnAspLysGlnThrGlyAlaTyr-448  
 456-GlnArgPheArgHisArgIleAsnThrGluTyrAlaThrGluArgPheThrSerLysGlyIle-476  
 491-HisPheThrLysGlyAsnSerLeu-499  
 514-ValAsnGlyLysPheSerGluAsnAla-524  
 529-LeuGlySerArgGlnLeuGlnSerArgValGlyVal-540  
 567-LysProPheGlyValGluIleAspGlyAspArgArgValIleAsnAsnLysThrValIleGluThr-588  
 594-AlaLysIleLysSer-598  
 605-SerPheAsnArgGlnThrSerLysHisHisHisAlaLys-617

**Hydrophilic Regions - Hopp-Woods**

1-LysLysLeuArgAspArgAsnSerGluTyrTrpLysGluGluThrTyrHis-17  
 20-SerAsnGlyArgThr-24  
 35-HisProPheAspPro-39  
 44-AsnAsnSerLysIleSerPheTyrAspLysGluTyrThrGlu-58  
 68-PheGlyValGluLysArgAsnGlyGluGluGluLysProLeu-81  
 88-CysValAsnThrGluAsnSerAsnAsnAspAsnCysLys-100  
 205-LysAsnAlaGluIleArgPheAsnThrLysAsnGluSerLeuLeuValLysGluAspTyrAlaGly-226  
 234-TyrAspLeuLysAspLysValProGlu-242  
 250-LysAsnIleThrGly-254

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263-LysAlaLeuAspAsnLeuLysHisLeuAsp-272  
 278-LysValAsnAspThrAlaAspLysAspAlaPheArgLeuSerSerLysTyrArgLys-296  
 304-GlnGlnArgProGluGlyPhe-310  
 314-ValGlnGluArgAspAspIle-320  
 338-LeuAsnAspLysAsnSerAspIlePheAsp-347  
 376-GluGlyTyrArgLysGlyVal-382  
 393-AsnGluSerAsnGln-397  
 406-GlnAlaGluGlnArgSerThrPheArgAsnProAspThrAspAsnLeuThr-422  
 440-LeuGlnAspLysGlnThr-445  
 456-GlnArgPheArgHisArgIleAsnThr-464  
 491-HisPheThrIlysLysGlyAsnSer-498  
 517-LysPheSerAspSerGluAsnIla-524  
 532-ArgGlnLeuGlnSer-536  
 569-PheGlyValGluIleAspGlyAspArgArgValIleAsn-581  
 594-AlaLysIleLysSer-598  
 606-PheAsnArgGlnThrSerLysHisHisHisAlaLys-617  
 g933  
**AMPHI Regions - AMPHI**  
 26-ProAsnIleProAlaLeuPheProLysHisProPheAspProPheGluAsnIleAsnAsnSerLysLys-48  
 63-GlyPheAlaArgGly-67  
 78-GluLysProLeuArgGlnTyrPheLysAspCysValAsnThr-91  
 101-IleSerSerPheGlyAsn-106  
 135-ValGlyAsnTyrIleGluTrpLeu-142  
 145-ThrLeuAsnLysLeuThrGlyTrpGlnGluHisLeuTyrAlaGlyLeuAspProPheHisTyrIleGluVal-168  
 264-AlaLeuAspAsnLeuLysHisLeuAspGlyHisGlnIleValLysValAsn-280  
 309-GlyPheThrLys-313  
 356-TrpLeuArgValIleAspGlyHisSerAsn-365  
 374-ProValGluGlyTyrArgLysGly-381  
 431-AlaGlyValTyrAlaThrTrpHis-438  
 447-AlaTyrValAspSerTrpMetGlnTyrGln-456  
 474-LysGlyIleThrAlaSer-479  
 483-GlyTyrAsnAlaLeuLeuAla-489  
 555-GlnProPheValAlaVal-560  
 606-PheAsnArgGlnThrSer-611

**Antigenic Index - Jameson-Wolf**

1-LysLysLeuArgAspArgAsnSerGluTyrTrpLysGluGluThrTyrHisIleLysSerAsnGlyArgThrTy  
 rPro-26  
 33-ProLysHisProPheAspProPheGluAsnIleAsnAsnSerLysIleSerPheTyrAspLysGluTyrT  
 hrGluAspTyr-60  
 68-PheGlyValGluLysArgAsnGlyGluGluGluLysProLeuArg-82  
 88-CysValAsnThrGluAsnSerAsnAsnAspAsnCysLysIleSerSer-103  
 112-IleLysSerAspIle-116  
 122-GlnIleLysAsnSerHisIleAsnSerGluIle-132  
 144-ProThrLeuAsnLysLeuThrGlyTrpGlnGlu-154  
 167-GluValThrAspAsnSerHis-173  
 189-SerLeuTrpLysProArgTrpAsnSerAsnIle-199  
 205-LysAsnAlaGluIleArgPheAsnThrLysAsnGluSerLeuLeuValLysGluAspTyrAlaGlyAla  
 ArgPhe-230  
 234-TyrAspLeuLysAspLysValProGlu-242  
 248-PheGluLysAsnIleThrGlyThrSer-256  
 263-LysAlaLeuAspAsnLeuLysHisLeuAspGlyHisGlnIleValLysValAsnAspThrAlaAspLysAsp  
 AlaPheArgLeuSerSerLysTyrArgLys-296  
 303-LeuGlnGlnArgProGluGlyPhe-310

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313-LysValGlnGluArgAspAspIle-320  
 337-ArgLeuAsnAspLysAsnSerAspIlePheAspArgThrLeuProArgLysGlyLeu-355  
 360-IleAspGlyHisSerAsnGlnTrpValGlnGlyLysThrAlaProValGluGlyTyrArgLysGlyVal-38  
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 392-GlnAsnGluSerAsnGlnLeu-398  
 403-MetGlyGlyGlnIleGluGlnArgSerThrPheArgAsnProAspThrAspAsnLeuThr-422  
 424-GlyAsnValLysGly-428  
 440-LeuAsnAspLysGlnThrGlyAlaTyr-448  
 456-GlnArgPheArgHisArgIleAsnThrGluTyrAlaThrGluArgPheThrSerLysGlyIle-476  
 491-HisPheThrLysLysGlyAsnSerLeu-499  
 514-ValAsnGlyLysSerGlyAspSerGluAsnAla-524  
 529-LeuGlySerArgGlnLeuGlnSerArgValGlyVal-540  
 567-LysProPheGlyValGluIleAspGlyAspArgArgValIleAsnAsnLysThrValIleGluThr-588  
 594-AlaLysIleLysSer-598  
 605-SerPheAsnArgGlnThrSerLysHisHisHisAlaLys-617

**Hydrophilic Regions - Hopp-Woods**

1-LysLysLeuArgAspArgAsnSerGluTyrTrpLysGluGluThrTyrHis-17  
 20-SerAsnGlyArgThr-24  
 35-HisProPheAspPro-39  
 44-AsnAsnSerLysIleSerPheTyrAspLysGluTyrThrGlu-58  
 68-PheGlyValGluLysArgAsnGlyGluGluGluLysProLeu-81  
 88-CysValAsnThrGluAsnSerAsnAsnAspAsnCysLys-100  
 205-LysAsnAlaGluIleArgPheAsnThrLysAsnGluSerLeuLeuValLysGluAspTyrAlaGly-226  
 234-TyrAspLeuLysAspLysValProGlu-242  
 250-LysAsnIleThrGly-254  
 263-LysAlaLeuAspAsnLeuLysHisLeuAsp-272  
 278-LysValAsnAspThrAlaAspLysAspAlaPheArgLeuSerSerLysTyrArgLys-296  
 304-GlnGlnArgProGluGlyPhe-310  
 314-ValGlnGluArgAspAspIle-320  
 338-LeuAsnAspLysAsnSerAspIlePheAsp-347  
 376-GluGlyTyrArgLysGlyVal-382  
 393-AsnGluSerAsnGln-397  
 406-GlnAlaGluGlnArgSerThrPheArgAsnProAspThrAspAsnLeuThr-422  
 440-LeuAlaAspLysGlnThr-445  
 456-GlnArgPheArgHisArgIleAsnThr-464  
 491-HisPheThrLysLysGlyAsnSer-498  
 517-LysPheSerAspSerGluAsnAla-524  
 532-ArgGlnLeuGlnSer-536  
 569-PheGlyValGluIleAspGlyAspArgArgValIleAsn-581  
 594-AlaLysIleLysSer-598  
 606-PheAsnArgGlnThrSerLysHisHisHisAlaLys-617  
 g936-1

**AMPHI Regions - AMPHI**

10-ThrLeuIleAlaAla-14  
 19-AlaLeuGlyGlyCysPheSerAlaVal-27  
 100-GlnPheValGlyGlnIle-105  
 112-AlaGluGlyValTyrAsnTyrIleThrValAlaSerLeuProArgThrAlaGlyAspIleAlaGlyAsp-13  
 4

**Antigenic Index - Jameson-Wolf**

1-MetLysProLysProHisThrVal-8  
 37-SerValIleAspArgArgThrThrGlyAlaGlnThrAspAspAsnValMet-53  
 56-ArgIleGluThrThrAlaArgSerTyrLeuArgGlnAsnAsnGlnThrLysGlyTyr-74  
 94-AlaThrGluGlyGluLysGlnPhe-101

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106-AlaArgSerGluGlnAlaAla-112  
 124-LeuProArgThrAlaGlyAspIleAlaGlyAspThrTrpAsnThrSerLysValArgAla-143  
 149-SerProAlaThrGlnAlaArgValLys-157  
 172-ThrProGluGluGlnAlaGlnIleThr-180

**Hydrophilic Regions - Hopp-Woods**

1-MetLysProLysProHisThr-7  
 37-SerValIleAspArgArgThrThrGlyAlaGlnThrAspAspAsnValMet-53  
 56-ArgIleGluThrThrAla-61  
 68-AsnAsnGlnThrLysGlyTyr-74  
 94-AlaThrGluGlyGluLysGlnPhe-101  
 106-AlaArgSerGluGlnAlaAla-112  
 125-ProArgThrAlaGly-129  
 152-ThrGlnAlaArgValLys-157  
 172-ThrProGluGluGlnAlaGlnIle-179  
 g937

**AMPHI Regions - AMPHI**

121-LysArgMetSerAspIleSerAlaGlyIleSerHis-132  
 231-LysGlnProAspArgIleAsp-237

**Antigenic Index - Jameson-Wolf**

18-ThrAspLeuProLeuAsnIle-24  
 26-AspIleMetThrAspLysGlyLysTrpLysLeuGluThr-38  
 43-LeuAsnSerGluAsnSerArgAlaAlaLeu-52  
 69-ProThrGluIleGlnGluAsnGlySerAsnThrAsp-80  
 94-GlyAsnThrAspIleTyrGlySerGlySer-103  
 107-HisGluGluArgLysLeuAspGlyAsnGlyLysThrArgAsnLysArgMetSerAspIle-126  
 134-PheLeuLysAspGlyLysAsnProAla-142  
 150-ThrValTyrGluLysSerArgAsnLysAlaSerSerGlyLys-163  
 186-TyrArgIleAsnGlySerLysThrLeuSerAspAspValLysTyrLysAlaGly-203  
 216-AlaAsnAspArgIleSerLeuThrGlyGly-225  
 230-GlyLysGlnProAspArgIleAspGlyLysLysGluSerAlaArgAsnThrSerThr-248  
 272-ValSerGlyGlnSerSerGluLeuLysLeu-282

**Hydrophilic Regions - Hopp-Woods**

26-AspIleMetThrAspLysGlyLysTrpLysLeu-36  
 46-GluAsnSerArgAlaAlaLeu-52  
 71-GluIleGlnGluAsnGlySerAsnThr-79  
 107-HisGluGluArgLysLeuAspGlyAsnGlyLysThrArgAsnLysArgMetSerAspIle-126  
 134-PheLeuLysAspGlyAsn-140  
 150-ThrValTyrGluLysSerArgAsnLysAlaSerSerGly-162  
 192-LysThrLeuSerAspAspValLysTyrLysAla-202  
 216-AlaAsnAspArgIleSer-221  
 231-LysGlnProAspArgIleAspGlyLysLysGluSerAlaArgAsn-245  
 276-SerSerSerIleLeuLysLeu-282  
 g950

**AMPHI Regions - AMPHI**

33-GlyValGlnLysSerAlaGlnGly-40  
 81-AlaThrValLysLysAlaHisLysHisThrLysAla-92

**Antigenic Index - Jameson-Wolf**

1-MetAsnLysAsnIle-5  
 26-LysProAlaSerAsnAlaThrGlyValGlnLysSerAlaGlnGlySerCysGlyAlaSerLysSerAlaGluGlySerCysGlyAlaSerLysSerAlaGluGlySerCysGly-63

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65-AlaAlaSerLysAlaGlyGluGlyLysCysGlyGluGlyLysCysGlyAlaThrValLysLysAlaHisLysH  
isThrLysAlaSerLysAlaLysAlaLysSerAlaGluGlyLysCysGlyGluGlyLysCysGlySerLys-112

**Hydrophilic Regions - Hopp-Woods**

33-GlyValGlnLysSerAlaGln-39  
43-GlyAlaSerLysSerAlaGluGlySerCysGlyAlaSerLysSerAlaGluGlySerCys-62  
65-AlaAlaSerLysAlaGlyGluGlyLysCysGlyGluGlyLysCys-79  
81-AlaThrValLysLysAlaHisLysHisThrLysAlaSerLysAlaLysAlaLysSerAlaGluGlyLysCysG  
lyGluGlyLysCysGlySerLys-112

g951

**AMPHI Regions - AMPHI**

9-ThrIleLeuSerValLeuAlaAla-16  
32-GluLeuProLysGluValGlyLysValLeuArgLysHisArgArgTyr-47  
62-ValGlyGluArgValAsnArgValPhe-70  
127-TrpArgGlnIleGluProIleProGlyGlu-136  
145-ArgAsnValLeuArgGluGlyGlyAsnGlnHisLeuAspGlyLeuGluGluValLeuAla-164  
189-AlaGlnLysAlaSerLysAlaValArgArg-198  
204-GluHisLeuProGluAlaAla-210  
227-IleGluAlaLeuGlnArgLeuAlaLysLeu-236  
254-LysTyrProGluIleLeuAspGlyPhePheGlu-264  
278-MetGluIleMetAsnLeuValSerLeuArgLysProAspAspAla-292  
325-ValIleAspGlyTyrAlaGluLys-332  
362-ValArgGlnTrpLeuLys-367  
395-AlaLeuArgGlnIleGlyArgValArgLysLeuProGluGlnGln-409  
416-AspAsnLeuSerLysIle-421  
423-MetLeuAlaLeuSer-427  
441-AsnIleAlaGlyLeuSerAlaAlaGlySerThrGluProLeuAlaGlu-457  
474-LysMetIleAlaAspLeuGluThr-481  
495-AsnLeuGlyTyrSer-499  
503-AspSerLysArgLeu-507  
563-HisLeuGlyGluVal-567  
579-AspValTrpThrGlnAla-584  
592-LysIleTrpArgGluThrLeuLys-599

**Antigenic Index - Jameson-Wolf**

29-AlaAspValGluLeuProLysGluValGlyLysValLeuArgLysHisArgArgTyrSerGluGluIleL  
ysAsnGluArgAlaArgLeu-59  
61-AlaValGlyGluArgValAsnArg-68  
77-ThrAlaLeuGlnLysGlyGlnAla-84  
96-GluArgThrLysSerProGluValAlaGluArgAlaLeuGlu-109  
126-LysTrpArgGlnIleGluProIleProGlyGluAlaGlnLysArgAlaGlyTrp-143  
147-ValLeuArgGluGlyGlyAsnGlnHisLeuAspGlyLeuGluGluValLeuAlaGlnSerAspAspValGln  
LysArgArgIle-174  
187-GlyValAlaGlnLysAlaSerLysAlaValArgArgAlaAlaLeuLys-202  
219-GlnGlyArgGluLysGluLysAlaIleGluAlaLeuGlnArgLeuAlaLysLeuAspThrGluIleLeuPro  
-242  
250-LeuThrAlaArgLysTyrProGluIleLeuAspGlyPhePheGluGlnThrAspThrGlnAsn-270  
285-SerLeuArgLysProAspAspAlaTyrAla-294  
301-GluHisAsnProAsnAlaAsn-307  
317-AlaAsnArgLysGluGlyAlaSer-324  
326-IleAspGlyTyrAlaGluLysAlaTyrGlyArgGlyGluGlnArgGlyArgAla-345  
354-AlaAspArgArgAspTyrAlaLys-361  
364-GlnTrpLeuLysValSerAlaPro-372  
375-LeuPheAspLysGlyVal-380  
387-AlaGluLeuAspGlyGlyArgAlaAlaLeu-396

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398-GlnIleGlyArgValArgLysLeuProGluGlnGlnGlyArgTyrPheThr-414  
 428-LysLeuProAspLysArgGluAlaLeu-436  
 447-SerAlaAlaGlySerThrGluProLeuAla-456  
 467-GluGlnPheGlyLysArgGlyLysMetIleAlaAspLeuGluThr-481  
 485-LeuThrProAspAsn-489  
 501-LeuSerAspSerLysArgLeuAspGluGlyPhe-511  
 519-GlnIleAsnProAspAspThrAlaValAsnAspSerIle-531  
 537-LeuLysGlyAspAlaGluSerAla-544  
 549-ArgTyrSerPheGluAsnAspProGluProGluVal-560  
 572-GlyGluArgAspGlnAla-577  
 585-AlaHisIleArgGlyAspLysIleTrpArgGluThrLeuLysArgTyrGly-602  
 604-AlaLeuProGluProSerArgLysProArgLys-614

**Hydrophilic Regions - Hopp-Woods**

29-AlaAspValGluLeuProLysGluValGlyLysValLeuArgLysHisArgArgTyrSerGluGluGluIleLyAsnGluArgAlaArgLeu-59  
 61-AlaValGlyGluArgValAsnArg-68  
 77-ThrAlaLeuGlnLysGlyGlnAla-84  
 96-GluArgThrLysSerProGluValAlaGluArgAlaLeuGlu-109  
 133-IleProGlyGluAlaGlnLysArgAlaGlyTrp-143  
 147-ValLeuArgGluGlyGlyAsnGlnHis-155  
 157-AspGlyLeuGluGluValLeuAlaGlnSerAspAspValGlnLysArgArgIle-174  
 188-ValAlaGlnLysAlaSerLysAlaValArgArgAlaAlaLeuLys-202  
 219-GlnGlyArgGluLysGluLysAlaIleGluAlaLeuGlnArgLeuAlaLysLeuAspThrGluIle-240  
 250-LeuThrAlaArgLysTyrProGluIle-258  
 263-PheGluGlnThrAspThrGlnAsn-270  
 285-SerLeuArgLysProAspAspAlaTyrAla-294  
 317-AlaAsnArgLysGluGlyAlaSer-324  
 329-TyrAlaGluLysAlaTyrGly-335  
 337-GlyThrGlyGluGlnArgGlyArgAla-345  
 354-AlaAspArgArgAspTyrAlaLys-361  
 387-AlaGluLeuAspGlyGlyArgAlaAlaLeu-396  
 398-GlnIleGlyArgValArgLysLeuProGluGlnGlnGly-410  
 428-LysLeuProAspLysArgGluAlaLeu-436  
 450-GlySerThrGluProLeuAla-456  
 469-PheGlyLysArgGlyLysMetIleAlaAspLeuGluThr-481  
 485-LeuThrProAspAsn-489  
 502-SerAspSerLysArgLeuAspGlu-509  
 521-AsnProAspAspThrAlaVal-527  
 539-GlyAspAlaGluSer-543  
 552-PheGluAsnAspProGluProGluVal-560  
 572-GlyGluArgAspGlnAla-577  
 587-LeuArgGlyAspLysIleTrpArgGluThrLeuLys-599  
 607-GluProSerArgLysProArgLys-614

g952

**AMPHI Regions - AMPHI**

47-SerValAlaThrLeuLeuAsn-53  
 66-LeuGluLysLeuGlyLysGluGlnMetArgAla-76  
 78-PheGluAspMetArgArgIle-84  
 100-GluGlnLeuAlaGlnLeu-105  
 122-SerValLeuArgGlyVal-127  
 147-AlaGlnPheLeuGluAla-152

**Antigenic Index - Jameson-Wolf**

24-GlnSerTrpLysAlaArgArgAspPheAsnIleValLysGlnAspLeuAspPheSerCys-43

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59-LysLeuThrGluGluGluValLeuGluLysLeuGlyLysGluGlnMetArgAlaSerPheGluAspMetArgA  
rgIleMetPro-86  
88-LeuGlyPheGluAlaLysGlyTyr-95  
113-LeuLysTyrArgLysAspAspHisPheSer-122  
125-ArgGlyValaspGlyAsnThr-131  
135-AlaAspProSerProGlyHis-141  
153-TrpGlnThrArgGluGlyAsnLeuAlaGly-162  
168-ValProLysLysAlaGluAlaAlleSer-176  
183-HisHisProLysArgGlnThrGlu-190

**Hydrophilic Regions - Hopp-Woods**

25-SerTrpLysAlaArgArgAspPheAsnIleValLysGlnAspLeuAspPhe-41  
59-LysLeuThrGluGluGluValLeuGluLysLeuGlyLysGluGlnMetArgAlaSerPheGluAspMetArgA  
rgIleMetPro-86  
88-LeuGlyPheGluAlaLysGly-94  
114-LysTyrArgLysAspAspHisPheSer-122  
153-TrpGlnThrArgGluGlyAsnLeu-160  
168-ValProLysLysAlaGluAlaAlleSer-176  
184-HisProLysArgGlnThrGlu-190  
**g953**

**AMPHI Regions - AMPHI**

38-AsnThrSerThrAsnValGlyGlyPheTyrGlyLeuThr-50  
79-ProPheThrGlyHis-83  
85-LysSerAlaAspIlePheAspAlaAlaGln-94  
150-GlyAspPheSerThrThr-155

**Antigenic Index - Jameson-Wolf**

21-TyrLysValAspGluTyrHisAla-28  
37-PheAsnThrSerThrAsnVal-43  
53-ValGluPheAspGlnAlaLysArgAspGlyLysIleAspIle-66  
74-GlnSerGlySerGlnPro-79  
94-GlnTyrProAspIleArgPheValSer-102  
104-LysPheAsnPheAsnGlyLysLysLeuValSer-114  
121-MetArgGlyLysThrAlaProValLysLeuLysAlaGluLys-134  
136-AsnCysTyrGlnSerProMetAlaGluThrGlyValCysGlyAspPheSerThrThrIleAspArgThr  
LysTrpGlyValAsp-164  
170-GlyMetThrLysAsnValArgIle-177  
179-IleGlnIleGluAlaAlaLysGln-186

**Hydrophilic Regions - Hopp-Woods**

21-TyrLysValAspGluTyrHisAla-28  
53-ValGluPheAspGlnAlaLysArgAspGlyLysIleAspIle-66  
107-PheAsnGlyLysLysLeuValSer-114  
121-MetArgGlyLysThrAlaProValLysLeuLysAlaGluLys-134  
142-MetAlaGluThrGluValCysGly-149  
154-ThrThrIleAspArgThrLysTrp-161  
173-LysAsnValArgIle-177  
179-IleGlnIleGluAlaAlaLysGln-186  
**g957-2**

**AMPHI Regions - AMPHI**

11-SerPhePheAlaLeuValPheAla-18  
39-AlaThrGluValProGluAsnPro-46  
48-AlaPheValAlaLysLeuAlaArgLeuPheArgAsnAla-60  
74-GluGluSerLeuAlaGlyAlaValAspAsp-83  
167-HisGlyGluAsnTyrGluThr-173

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198-GluAspValTyrGluHisCysLeuGlyCysTyrGlnMet-210  
 218-TyrArgAspValalaAsn-223  
 235-SerAsnArgIleAlaSer-240  
 251-MetArgGluLeuMetProArg-257  
 355-GluLysGluValSerArgTyrAlaGluAlaAlaAlaArg-367

**Antigenic Index - Jameson-Wolf**

29-IleAsnProArgTrp-33  
 35-LeuSerAspThrAlaThrGluValProGluAsnProAsnAla-48  
 57-PheArgAsnAlaAspArgAla-63  
 67-ValLysGluSerMetArgThrGluGluSerLeu-77  
 80-AlaValAspGlyProLeuGlnSerGluLysAspTyr-92  
 98-ArgLeuSerArgLeuLysGluLysAlaLys-107  
 112-ThrGluGlnGluHisGlyGlu-118  
 125-TyrIleGlyGluGlyGly-130  
 136-LeuSerGlnArgSerProGluAlaPheVal-145  
 149-TyrLeuTyrArgAsnAspArgProPheSer-158  
 166-AlaHisGlyGluAsnTyrGluThrThrGlyGluTyrArgVal-179  
 182-GlnProAspGlySerVal-187  
 190-AlaAlaGlyArgGlyLysIleGlyGluAspValTyr-201  
 217-LysTyrArgAspValAlaAsnAspGluGlnLysValTrpAspPheArgGluGluSerAsnArgIleAlaSer  
 AspSerArgAspTyrVal-246  
 250-AsnMetArgGluLeuMetProArgGlyMetLysAlaAsnSer-263  
 267-GlyTyrAspAlaAspGlyLeuProGlnLys-276  
 280-SerPheAspAsnGlyLysLysArgGlnSerPheGluTyrTyrLeuLysAsnGlyAsn-298  
 309-LeuLysAlaAspGlyValThr-315  
 329-LeuAspGlyGlyArgIleIleArgGluGluLysGlnGlyAspArgLeuProAspPhe-347  
 349-LeuAsnLeuGluAspLeuGluLysGluValSerArgTyrAlaGluAlaAlaAlaArgArgSerGlyGlyArg  
 ArgGlyLeuSerHis-377

**Hydrophilic Regions - Hopp-Woods**

38-ThrAlaThrGluValProGluAsnPro-46  
 57-PheArgAsnAlaAspArgAla-63  
 67-ValLysGluSerMetArgThrGluGluSerLeu-77  
 80-AlaValAspAspGlyProLeuGlnSerGluLysAspTyr-92  
 98-ArgLeuSerArgLeuLysGluLysAlaLys-107  
 112-ThrGluGlnGluHisGlyGlu-118  
 136-LeuSerGlnArgSerProGlu-142  
 151-TyrArgAsnAspArgProPhe-157  
 169-GluAsnTyrGluThrThrGlyGluTyr-177  
 190-AlaAlaGlyArgGlyLysIleGlyGluAspValTyr-201  
 217-LysTyrArgAspValAlaAsnAspGluGlnLysValTrpAspPheArgGluGluSerAsnArgIleAlaSer  
 AspSerArgAsp-244  
 250-AsnMetArgGluLeuMetProArgGlyMetLys-260  
 268-TyrAspAlaAspGlyLeuPro-274  
 282-AspAsnGlyLysLysArgGlnSer-289  
 309-LeuLysAlaAspGlyValThr-315  
 331-GlyGlyArgIleIleArgGluGluLysGlnGlyAspArgLeuPro-345  
 349-LeuAsnLeuGluAspLeuGluLysGluValSerArgTyrAlaGluAlaAlaArgArgSerGlyGlyArg  
 ArgGlyLeuSer-376

**g958****AMPHI Regions - AMPHI**

39-GlyGlyAlaGlnGlyAlaSerGluSerAlaGln-49  
 85-ProGluAspTyrThrArgIleValAlaAsp-94  
 175-GlyArgArgLeuGlnSerValSerArgTyrAlaGluMetLeuGly-189

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342-IleSerAspThrLeuGln-347  
 400-GlnLysTyrGlnThrLeuAlaAsn-407  
 426-TrpHisLysAsnAlaGly-431  
 489-GlyGlyLysAlaSerArgSerValGlyArgValLeuProValVal-503  
 526-IleGluProArgLeu-530  
 540-GlnAsnAspLeuProAsnPheAsp-547  
 571-AsnAlaAlaAsnSerLeuSerThrAlaValGlnSer-582

615-ValGlyLysAsnPro-619  
 692-AspLysLeuSerGln-696  
 722-LysLysProIleGlu-726

768-AspLeuSerSerValGlyArgAsnPro-776

**Antigenic Index - Jameson-Wolf**

19-GlyThrHisCysAla-23  
 27-ValAlaAlaGluGluAlaAspGlyArgValAlaGluGlyGlyAlaGlnGlyAlaSerGluSerAlaGlnAlaSer-51  
 62-CysSerAsnGluSerGlySerProGluArgThrGluAlaAlaValGlnGlySerGlyGluAlaSerValProGluAspTyrThrArgIleValAlaAspArgMetGluGlyGlnSerLysValLysValArgAlaGluGly-108  
 110-ValllelleGluArgAspGlyAlaValLeu-119  
 122-AspTrpAlaAspTyrAspGlnSerGlyAsp-131  
 134-ThrValGlyAspArgPheAlaLeuGlnGlnAspGlyThrLeuIleArgGlyGluThrLeu-153  
 157-LeuGlnGlnThrGlyAlaHisAsnValArgMetGluThrGluGlnGlyGlyArgArgLeuGlnSerValSerArgThrAlaGluMetLeuGlyArgGlyArgTyrLysLeuThrGluThrGlnPheAsnThrCysSerAlaGlyAspAlaGlyTrp-210  
 215-AlaSerValGluAlaAspArgGlyLysGlyIleGly-226  
 248-PheProLeuAspGlyAsnArgLysSerGlyLeu-258  
 264-SerAlaGlySerAspGlyVal-270  
 291-GlyIleIleGlyGluArgGlyAlaThrPheAspGlyGlnIleArgTyrLeuArgProAspTyrSerGlyGlnThrAsp-316  
 320-LeuProHisAspLysLysSerGlyArgAsnAsnArgTyrGlnAla-334

336-TrpIlnHisArgHisAspIleSerAspThrLeu-346  
 351-AspPheAsnGlnValSerAspSerGlyTyrTyrArgAspPheTyrGlyGlyGluGluIleAlaGlyAsnValAsnLeuAsnArgArgValTrp-381  
 383-AspTyrGlyGlyArgAlaAlaGlyGlySerLeuAsn-394  
 400-GlnLysTyrGlnThr-404

406-AlaAsnGlnSerGlyTyrLysAspGluProTyr-416  
 420-ProArgLeuSerAlaAspTrpHisLysAsnAlaGlyArgAlaGlnIle-435  
 443-ArgPheSerHisAspGlyArgGlnAspGlySerArg-454  
 465-PheSerAsnSerTrpGly-470  
 473-ArgProLysLeuGlyLeu-478  
 487-SerPheGlyGlyLysAlaSerArgSerValGlyArg-498  
 506-AspGlyGlyThrPheGluArgAsnThrArgLeuPheGlyGly-521  
 537-AlaLysSerGlnAsnAspLeuProAsnPheAspSerSerGluSerSerPheGly-554  
 559-PheArgGluAsnLeuTyrTyrGlyAsnAspArgIleAsnAla-572  
 583-ArgIleLeuAspGlyAlaThrGlyGluGluArgPheArgAlaGlyIleGlyGlnLysPheTyrPheLysAspAspAlaValMetLeuAspGlySerValGlyLysAsnProArgSerArgSerAspTrp-625  
 630-SerGlyIleGlyGly-635

641-SerSerIleHisTyrAsnGlnAsnAspLysArgAlaGluHis-654  
 659-AlaGlyTyrArgProAlaProGlyLysValLeuAsnAlaArgTyrLysTyrGlyArgAsnGluLysIle-681

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692-AspLysLeuSerGln-696

717-TyrGlyPheGluAlaLysLysProIleGlu-726

731-AlaGluTyrLysSerSerCysGlyCysTrp-740

750-ValThrGlyGluAsnThrTyrLysAsn-758

765-GlnLeuLysAspLeuSerSerValGlyArgAsnProAlaGlyArgMetAspVal-782

792-SerLeuSerAlaGlyArgAsnLysArgPro-801

**Hydrophilic Regions - Hopp-Woods**

27-ValAlaAlaGluGluAlaAspGlyArgValAlaGluGlyGlyAla-41

43-GlyAlaSerGluSerAlaGlnAlaSer-51

64-AsnGluSerGlySerProGluArgThrGluAlaAlaVal-76

78-GlySerGlyGluAlaSerValProGluAspTyrThr-89

92-ValAlaAspArgMetGluGlyGlnSerLysValLysValArgAlaGluGly-108

110-ValIleIleGluArgAspGlyAla-117

124-AlaAspTyrAspGlnSerGlyAsp-131

146-ThrLeuIleArgGlyGluThr-152

159-GlnGlnThrGlyGluAlaHisAsnValArgMetGluThrGluGlnGlyGlyArgArgLeuGlnSerValSerArgThrAlaGluMetLeuGlyGlyArgTyrLysLeuThrGlu-197

215-AlaSerValGluAlaAspArgGlyLysGly-224

249-ProLeuAspGlyAsnArgLysSerGly-257

265-AlaGlySerAspGlyVal-270

293-IleGlyGluArgGlyAlaThr-299

304-IleArgTyrLeuArg-308

322-HisAspLysLysSerGlyArgAsnAsnArgTyrGlnAla-334

336-TrpGlnHisArgHisAspIleSerAsp-344

409-SerGlyTyrLysAspGluProTyr-416

422-LeuSerAlaAspTrpHisLysAsnAlaGlyArgAla-433

444-PheSerHisAspGlyArgGlnAspGlySerArg-454

488-PheGlyGlyLysAlaSerArgSerValGly-497

509-ThrThrPheGluArgAsnThrArg-516

538-LysSerGlnAsnAsp-542

547-AspSerSerGluSer-551

568-AspArgIleAsnAla-572

588-AlaThrGlyGluGluArgPheArgAla-596

603-TyrPheLysAspAspAlaValMet-610

614-SerValGlyLysAsnProArgSerArgSerAsp-624

647-GlnAsnAspLysArgAlaGluHis-654

673-TyrLysTyrGlyArgAsnGluLysIle-681

719-PheGluAlaLysLysProIleGlu-726

731-AlaGluTyrLysSer-735

765-GlnLeuLysAspLeuSerSerValGlyArgAsnProAlaGlyArgMetAspVal-782

794-SerAlaGlyArgAsnLysArgPro-801

g959

**AMPHI Regions - AMPHI**

56-AlaAlaTrpAlaArgValGlyGly-63

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**Antigenic Index - Jameson-Wolf**

24-AlaHisHisAspGlyHisGlyAspAspAspHisGlyHis-36  
 38-AlaHisGlnHisGlyLysGlnAspLysIleIleSer-49  
 51-AlaGlnAlaGluLysAlaAla-57  
 60-ArgValGlyGlyLysIleThrAspIleAspLeuGluHisAspAspGlyArgProHisTyrAspValGluIleV  
 allysAsnGlyGlnGluTyr-90  
 94-ValAspAlaArgThrGlyArgValIleSerSerArgArgAspAsp-108

**Hydrophilic Regions - Hopp-Woods**

27-AspGlyHisGlyAspAspAspHisGlyHis-36  
 40-GlnHisGlyLysGlnAspLysIleIleSer-49  
 51-AlaGlnAlaGluLysAlaAla-57  
 61-ValGlyGlyLysIleThrAspIleAspLeuGluHisAspAspGlyArgProHisTyr-79  
 82-GluIleValLysAsnGlyGlnGluTyr-90  
 94-ValAspAlaArgThrGlyArg-100  
 102-IleSerSerArgArgAspAsp-108  
 g973  
**AMPHI Regions - AMPHI**  
 12-GluArgLeuIleAlaArgLeuAlaArgGluProAspSerAlaGluAspValLeuAsnLeuLeuArgGlnAla-  
 35  
 44-AspThrLeuThrArgLeuGluLysValLeuAspPhe-55  
 77-AspSerIleGluArgIleThrAlaTyr-85  
 112-AspLeuLeuLysTyrMet-117  
 143-AlaLeuLeuLysGluPheArgGluGln-151  
 171-PheGluAspIleIleGluGlnIleValGlyAspIleGluAsp-184  
 190-GluSerAlaAspAspIleHisSerVal-198  
 208-AlaThrGluIleGluAspIleAsnAlaPhe-217  
 235-IleGlnGluLeuGly-239

**Antigenic Index - Jameson-Wolf**

1-MetAspGlyAlaGlnProLysThrAsnPhe-10  
 18-LeuAlaArgGluProAspSerAlaGluAspVal-28  
 34-GlnAlaHisGluGlnGluValPheAspAlaAspThrLeuThrArgLeuGluLysValLeuAsp-54  
 56-AlaGluLeuGluValArgAspAlaMetIleThrArgSerArgMetAsnValLeuLysGluAsnAspSerIleG  
 luArg-81  
 96-ValIleGlyGluAspLysAspGluVal-104  
 118-PheAsnProGlnPheHis-124  
 136-ProGluGlyLysSer-140  
 146-LysGluPheArgGluGlnArgAsnHis-154  
 159-IleAspGluTyrGlyGlyThrSerGly-167  
 178-IleValGlyAspIleGluAspGluPheAspGluAspGluSerAlaAspAspIleHis-196  
 199-SerAlaGluArgTrpArg-204  
 209-ThrGluIleGluAsp-213  
 219-GlyThrGluTyrGlySerGluGluAlaAspThr-229  
 239-GlyHisLeuProValArgGlyGluLysValLeu-249  
 258-AlaArgAlaAspAsnArgArgLeuHis-266

**Hydrophilic Regions - Hopp-Woods**

1-MetAspGlyAlaGlnProLys-7  
 18-LeuAlaArgGluProAspSerAlaGluAspVal-28  
 34-GlnAlaHisGluGlnGluValPheAsp-42  
 44-AspThrLeuThrArgLeuGluLysValLeuAsp-54  
 56-AlaGluLeuGluValArgAspAlaMetIleThrArgSerArgMetAsnValLeuLysGluAsnAspSerIleG  
 luArg-81  
 96-ValIleGlyGluAspLysAspGluVal-104

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136-ProGluGlyLysSer-140  
 146-LysGluPheArgGluGlnArgAsn-153  
 178-IleValGlyAspIleGluAspGluPheAspGluAspGluSerAlaAspAspIleHis-196  
 199-SerAlaGluArgTrpArg-204  
 209-ThrGluIleGluAsp-213  
 222-TyrGlySerIleGluAlaAspThr-229  
 243-ValArgGlyGluLysValLeu-249  
 258-AlaArgAlaAspAsnArgArgLeuHis-266

**g981**

**AMPHI Regions - AMPHI**  
 32-AsnProGlyLysValTyrArgValAlaSer-41  
 46-AlaProPheGluSerLeuAsp-52  
 66-AsnAlaMetAlaLys-70  
 132-AsnValSerSerGluAspLeuLysLysMetAsnLysValGly-146  
 167-LysIleAlaArgPheGlu-172  
 181-LeuGluAsnGlyGlyLeuAspSerValVal-190  
 197-AlaAsnTyrValLysAsnAsnPro-204  
 207-GlyMetAspPheValThrLeuPro-214  
 233-ValLysMetLeuAsnAspAlaLeuGluLysValArgGluSerGlyGluTyr-249

**Antigenic Index - Jameson-Wolf**

19-CysGlyGlyGlnGlyLysAspAlaAlaAla-28  
 30-AlaAlaAsnProGlyLysValTyrArg-38  
 49-GluSerLeuAspSerLysGlyAsnValGluGlyPheAsp-61  
 76-IleGluPheLysHisGlnProTrpAspSer-85  
 90-LeuAsnAsnGlyAspAlaAspVal-97  
 104-IleThrAspAspArgLysGlnSerMetAspPheSerAspProTyrPhe-119  
 127-ValProLysGlyLysValSerSerGluAspLeuLysLysMetAsnLysValGly-146  
 149-ThrGlyHisThrGlyAspPheSerVal-157  
 159-LysLeuLeuGlyAsnAspSerLysProTyleAlaArg-170  
 179-LysGluLeuGluGlyGlyLeuAspSerValValSerAspSerAla-194  
 201-LysAsnAsnProAlaLysGlyMetAspPhe-210  
 214-ProAspPheThrThr-218  
 225-ValArgGlyAspGluAlaThrVal-233  
 235-MetLeuAsnAspAlaLeuGluLysValArgGluSerGlyGluTyrAspLysIleTyr-253  
 257-PheAlaLysGluGlyGlyGlnAlaAlaLys-266

**Hydrophilic Regions - Hopp-Woods**

21-GlyGlnGlyLysAspAlaAlaAla-28  
 49-GluSerLeuAspSerLysGlyAsnValGluGlyPheAsp-61  
 91-AsnAsnGlyAspAlaAspVal-97  
 104-IleThrAspAspArgLysGlnSerMetAspPheSer-115  
 128-ProLysGlyLysLysValSerSerGluAspLeuLysLysMetAsnLys-144  
 164-AspAsnProLysIleAlaArg-170  
 179-LysGluLeuGluAsnGlyGlyLeu-186  
 203-AsnProAlaLysGlyMetAsp-209  
 225-ValArgLysGlyAspGluAlaThrVal-233  
 235-MetLeuAsnAspAlaLeuGluLysValArgGluSerGlyGluTyrAspLysIleTyr-253  
 257-PheAlaLysGluGlyGlyGlnAlaAlaLys-266

**g982****AMPHI Regions - AMPHI**

10-ArgPheLeuGlnLysMetValAsnGlyValAsnIleLeuProAlaAlaAspTrp-27  
 70-AlaGlnMetValLysGluValAlaSerLysThr-80  
 99-ValAlaGluGlyMetLysTyr-105

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114-AspLeuLysArgGlyIleAspLysAlaValAlaAlaLeuValGluGluLeuLysAsnIleAlaLysProCys  
 AspThrSerLysGluIleAlaGlnValGlySer-148  
 159-AlaIleIleAlaGluAlaMetGluLysValGly-169  
 184-AsnGluLeuAspValValGluGlyMet-192  
 208-GluLysGlnIleAlaGlyLeuAsp-215  
 226-IleSerAsnIleArgAspLeuLeuProValLeuGluGlnValAlaLysAla-242  
 264-AsnAsnIleArgGlyIleLeuLysValAla-274  
 312-ThrLeuAspAspLeuGlyGlnThrLysArg-321  
 330-ThrValIleAspGlyPheGlyAspAlaAla-339  
 366-GluArgValAlaLysLeuAlaGlyGlyVal-375  
 425-LeuGluAsnIleUstThr-430  
 443-LeuArgAlaValGluSerProLeuArgGlnIleValAlaAsnAla-457  
 483-GluTyrGlyAspMetIleGlyMet-490  
 499-ThrArgSerAlaLeu-503

**Antigenic Index - Jameson-Wolf**

1-AlaSerGlnAsnLeuArgPheAspAsnArgPheLeu-12  
 31-GlyAlaLysGlyArgAsnValValVal-39  
 42-AlaPheGlyGlyProHisIleThrLysAspGlyValThrValAlaLysGluIleGluLeuLysAspLysPheG  
 luAsnMetGly-69  
 72-MetValLysGluValAlaSerLysThrAsnAspValAlaGlyAspGlyThrThr-89  
 111-AsnProThrAspLeuLysArgGlyIleAspLysAlaVal-123  
 128-GluGluLeuLysAsnIleAlaLysProCysAspThrSerLysGluIleAla-144  
 149-IleSerAlaAsnSerAspGluGlnVal-157  
 163-GluAlaMetGluLysGluGlyValIleThrValGluAspGlyLysSerLeuGluAsnGluLeu  
 AspVal-188  
 192-MetGlnPheAspArgGlyTyr-198  
 206-AspAlaGluLysGlnIleAla-212  
 222-PheAspLysLysIleSerAsnIleArgAsp-231  
 238-GlnValAlaLysAlaSerArg-244  
 251-GluAspValGluGlyGluAla-257  
 265-AsnIleArgGlyIleLeu-270  
 277-AlaProGlyPheGlyAspArgArgLysAlaMetLeu-288  
 300-IleSerGluGluValGluLeuSerLeuGluLysAlaThrLeuAspAspLeuGlyGlnThrLysArgIleGlu  
 IleGlyGluGluAsnThrThr-330  
 333-AspGlyPheGlyAspAlaAlaGlnIleGluAlaArgValAlaGluIleArgGlnGlnIleGluThrAlaThr  
 SerAspTyrAspLysGluLysLeuGlnGluArgValAlaLysLeuAlaGly-373  
 384-ThrGluValGluMetLysGluLysAspArgValGluAspAlaLeuHis-400  
 404-AlaAlaValGluGluGlyVal-410  
 420-ArgAlaArgAlaAlaLeu-425  
 428-LeuHisThrGlyAsnAlaAspGlnAspAlaGlyVal-439  
 445-AlaValGluSerProLeuArg-451  
 456-AsnAlaGlyGluProSerVal-463  
 468-ValLeuGluGlyLysGlyAsnTyrGlyTyr-477  
 479-AlaGlySerGlyGluTyrGlyAsp-486  
 494-AspProAlaLysValThrArgSerAlaLeu-503  
 522-GluIleProGluGluLysProAlaValProAspMetGlyGly-535

**Hydrophilic Regions - Hopp-Woods**

5-LeuArgPheAspAsn-9  
 32-AlaLysGlyArgAsnValValVal-39  
 47-HisIleThrLysAspGlyValThrValAlaLysGluIleGluLeuLysAspLysPheGluAsn-67  
 72-MetValLysGluValAlaSerLysThrAsnAspValAlaGlyAspGlyThrThr-89  
 113-ThrAspLeuLysArgGlyIleAspLysAlaVal-123  
 128-GluGluLeuLysAsnIleAlaLysProCysAspThrSerLysGluIleAla-144

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151-AlaAsnSerAspGluGlnVal-157  
 163-GluAlaMetGluLysValGlyLysGluGlyValIleThrValGluAspGlyLysSerLeuGluAsnGluLeu  
 AspVal-188  
 206-AspAlaGluLysGlnIleAla-212  
 222-PheAspLysIleSerAsnIleArgAsp-231  
 238-GlnValAlaLysAlaSerArg-244  
 251-GluAspValGluGlyGluAla-257  
 279-GlyPheGlyAspArgArgLysAlaMetLeu-288  
 300-IleSerGluGluValGlyLeuSerLeuGluLysAlaThrLeuAspAspLeuGlyGlnThrLysArgIleGlu  
 IleGluGluAsnThrThr-330  
 339-AlaGlnIleGluAlaArgValAlaGluIleArgGlnGlnIleGluThrAlaThrSerAspTyrAspLysGlu  
 LysLeuGlnGluArgValAlaLys-370  
 384-ThrGluValGluMetLysGluLysLysAspArgValGluAspAlaLeuHis-400  
 404-AlaAlaValGluGluGlyVal-410  
 420-ArgAlaArgAlaAlaLeu-425  
 431-GlyAsnAlaAspGlnAspAla-437  
 445-AlaValGluSerProLeu-450  
 457-AlaGlyGlyGluPro-461  
 468-ValLeuGluGlyLysGly-473  
 480-GlySerGlyGluTyrGlyAsp-486  
 494-AspProAlaLysValThrArg-500  
 522-GluIleProGluGluLysProAlaVal-530  
**g986**  
**AMPHI Regions - AMPHI**  
 6-GlnTyrPheAlaLeuAlaAlaLeuCysAlaAlaLeuLeuAla-19  
 21-CysGluLysAlaGly-25  
 36-SerPheValGluArgIleGluHis-43  
 55-ProAspPheAlaGlnLeuValGln-62  
 97-AspProPheTyrGluPhePheLysArgLeuValProAsnMetProGluIleProGln-115  
 145-AlaGlyMetGlySerIle-150  
 162-AlaLysLeuIleGlySerAspVal-169  
 189-IleGlyAsnProLysAsnLeuLysProGly-198  
 200-TrpValAlaAlaIleGly-205  
 287-AlaGluGlnLeuLysAsnThrGlyLysVal-296  
 393-AlaAlaGluHisThrGly-398  
 471-ArgLysAlaMetAspLysAla-477

**Antigenic Index - Jameson-Wolf**

20-GlyCysGluLysAlaGlySer-26  
 29-GlyAlaAspLysLysGluAlaSerPheValGluArgIleGluHisThrLysAspAspGlySerVal-50  
 61-ValGlnSerGluGlyProAla-67  
 75-ProAlaProArgThrGlnAsnGlySerGlyAsnAlaGluThrAspSerAspProLeuAlaAspSerAspPro  
 he-99  
 104-LysArgLeuValProAsnMetProGluIleProGlnGluGluAlaAspAspGlyGlyLeu-123  
 154-LeuAsnAspLysArgGluTyrThr-161  
 165-IleGlySerAspValGlnSerAspValAla-174  
 179-AspAlaThrGluGluLeuPro-185  
 189-IleGlyAsnProLysAsnLeuLysProGlyGlu-199  
 208-PheGlyPheAspAsnSerVal-214  
 219-VaiSerAlaLysGlyArgSerLeuProAsnGluSerTyr-231  
 242-AsnProGlyAsnSerGlyGlyPro-249  
 265-TyrSerArgSerGlyGly-270  
 288-GluGlnLeuLysAsnThrGlyLysValGlnArgGlyGlnLeu-301  
 316-PheGlyLeuAspLysAlaSerGly-323  
 330-LeuProGlySerProAlaGluArgAlaGlyLeuGlnAlaGlyAsp-344

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349-LeuAspGlyGlyGluIleArgSerSerGlyAspLeu-360  
 368-ThrProGlyLysGluValSer-374  
 378-TrpArgLysGlyGluGluIleThrIle-386  
 394-AlaGluHisThrGlyAlaSerSerLysThrAspGluAlaProTyrThrGluGlnGlnSerGlyThrPhe-41  
 6  
 427-ThrHisThrAspSerSerGlyLysHis-435  
 440-ArgValSerAspAlaAlaGluArgAlaGlyLeuArgArgGlyAspGluIleLeu-457  
 463-ProValAsnAspGluAlaGlyPheArgLysAlaMetAspLysAlaGlyLysAsnVal-481  
 486-MetArgArgGlyAsnThr-491

**Hydrophilic Regions - Hopp-Woods**

20-GlyCysGluLysAlaGly-25  
 29-GlyAlaAspLysLysGluAlaSerPheValGluArgIleGluHisThrLysAspAspGlySer-49  
 75-ProAlaProArgThrGlnAsnGlySerGlyAsnAlaGluThrAspSerAspProLeuAlaAspSerAspPro-98  
 111-ProGluIleProGlnGluGluAlaAspAspGlyGly-122  
 154-LeuAsnAspLysArgGluTyrThr-161  
 179-AspAlaThrGluGluLeuPro-185  
 193-LysAsnLeuLysPro-197  
 221-AlaLysGlyArgSerLeuPro-227  
 288-GluGlnLeuLysAsnThrGlyLysValGlnArgGlyGln-300  
 317-GlyLeuAspLysAlaSer-322  
 333-SerProAlaGluArgAlaGlyLeuGln-341  
 350-AspGlyGlyGluIleArgSerSerGlyAsp-359  
 368-ThrProGlyLysGluValSer-374  
 379-ArgLysGlyGluGluIleThrIle-386  
 394-AlaGluHisThrGlyAlaSerSerLysThrAspGluAlaProTyrThrGluGlnGlnSer-413  
 428-HisThrAspSerSerGly-433  
 440-ArgValSerAspAlaAlaGluArgAlaGlyLeuArgArgGlyAspGluIleLeu-457  
 463-ProValAsnAspGluAlaGlyPheArgLysAlaMetAspLysAlaGlyLys-479  
**g987**  
**AMPHI Regions - AMPHI**  
 17-CysSerSerTrpLeu-21  
 65-ProHisGluAlaPhe-69  
 121-AsnThrArgGly-124  
 135-HisProAsnIleValArgLeuPheAsnProPheValLeuArgLysTrpArgAlaLeuGlyTyrLeuThrAspPheProArgLeuAsnArg-164  
 186-GlyAspGluTyrPheLysVal-192  
 201-LeuAspIleLeuIleThr-206  
 210-VaIglyGluValSerHisAspPheAspArgTyrTrpAla-222  
 229-AlaThrArgIleIleArgSerGly-236  
 238-IleGlyLysGlyLeuGlnAla-244  
 288-SerAspSerProAlaLysGlyLeuAspArg-297  
 306-GlyArgLeuGlnAspAlaLeuLysGlnPro-315  
 332-GlyThrAspAlaLeuAlaLysLeuValGlnAsp-342  
 354-GlnAlaThrAspValAlaAla-360  
 442-LysIleAlaGluGlnMetGluArgThrLeuAlaAspThrThrPro-456  
 485-ProGluAlaLysLeuTrpLysArgIleAlaAlaLysIleLeuSerLeuLeuProIleGluGlyLeu-506

**Antigenic Index - Jameson-Wolf**

1-MetLysThrArgSer-5  
 23-ProLeuGluGluArgThrGluSerArgHisPheAsnThrSerLysProValLeu-40  
 49-HisThrProHisAsnAsnGlyLeuSer-57  
 77-GluSerAlaGluHisSerLeu-83  
 90-TrpArgAsnAspIleSerGlyArgLeu-98

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107-AlaGluArgGlyValArg-112  
 115-LeuLeuLeuAspAspAsnAsnThrArgGlyLeuAsp-126  
 134-SerHisProAsnIle-138  
 158-AspPheProArgLeuAsnArgArgMetHisAsnLysSerPheThrAlaAspAsnArgAla-177  
 181-GlyGlyArgAsnIleGlyAspGluTyrPheLysValGlyGluAspThrVal-197  
 213-ValSerHisAspPheAspArgTyrTrp-221  
 224-HisSerAlaHisAsn-228  
 231-ArgIleIleArgSerGlyAsnIleGlyLysGlyLeu-242  
 246-GlyTyrAsnAspGluThrSerArg-253  
 258-ArgTyrArgGluThrValGlu-264  
 266-SerProLeuTyrGln-270  
 272-IleGlnThrGlyArgIleAsp-278  
 286-LeuIleSerAspSerProAlaLysGlyLeuAspArgAspArgLysProProIle-304  
 307-ArgLeuGlnAspAlaLeuLysGlnProGluLysSer-318  
 327-ValProThrLysSerGlyThrAspAlaLeu-336  
 339-LeuValGlnAspGlyIleAsp-345  
 366-VallysTyrArgLysPrcLeuLeu-373  
 390-AlaThrLysAspLysGlyLeuThrGlySerSerVal-401  
 411-ValAspGlyLysArgIlePhe-417  
 421-PheAsnLeuAspProArgSerAlaArgLeuAsnThr-432  
 439-GluSerProLysIleAlaGluGlnMetGluArgThrLeuAlaAspThrThrProGluTyrAlaTyr-460  
 462-ValThrLeuAspLysHisAsnArgLeuGlnTrpHisAspProAlaThrArgLysThrTyrProAsnGluPro  
 GluAlaLysLeuTrpLys-491

**Hydrophilic Regions - Hopp-Woods**

1-MetLysThrArgSer-5  
 24-LeuGluGluArgThrGluSerArgHisPheAsnThr-35  
 77-GluSerAlaGluHisSerLeu-83  
 107-AlaGluArgGlyValArg-112  
 115-LeuLeuLeuAspAspAsnAsnThrArgGlyLeuAsp-126  
 160-ProArgLeuAsnArgArgMetHisAsn-168  
 171-PheThrAlaAspAsnArgAla-177  
 188-GluTyrPheLysValGlyGluAspThrVal-197  
 213-ValSerHisAspPheAspArg-219  
 247-TyrAsnAspGluThrSerArg-253  
 258-ArgTyrArgGluThrValGlu-264  
 273-GlnThrGlyArgIleAsp-278  
 290-SerProAlaLysGlyLeuAspArgAspArgLysProProIle-304  
 307-ArgLeuGlnAspAlaLeuLysGlnProGluLysSer-318  
 330-LysSerGlyThrAspAlaLeu-336  
 339-LeuValGlnAspGlyIleAsp-345  
 366-VallysTyrArgLysProLeuLeu-373  
 390-AlaThrLysAspLysGlyLeuThr-397  
 423-LeuAspProArgSerAlaArgLeuAsnThr-432  
 439-GluSerProLysIleAlaGluGlnMetGluArgThrLeuAla-452  
 463-ThrLeuAspLysHisAsnArg-469  
 475-ProAlaThrArgLysThrTyrProAsnGluProGluAlaLysLeuTrpLys-491  
 g988

**AMPHI Regions - AMPHI**

45-SerLysIleGluSerLeuAlaArg-52  
 125-GlnMetArgGlyVal-129  
  
 154-AspIleValGluArgAlaGlnSerLysVal-163  
 221-AlaLysIleIleGluValLeuGlyAspTyrAlaAsp-232

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248-HisArgPheSerGluAlaCysAlaLysSerAlaLysLysIleProAspHisValArgLys-267  
 288-ThrAlaArgAspPheAspAsp-294  
 299-GluLysValGlyArgAsnTyr-305  
 310-AlaIleAlaAspValSerHistYrrValArgProAspAsp-322  
 348-AsnLeuSerAsnGly-352  
 396-AsnGlnValTrpLysTrpLeuSerAspGlyIleGlyAsnProHisLys-411  
 413-GlnIleAspThrLeuTyrLysLeuPheLysIleLeuGlnLys-426  
 494-LeuGlyProThrProGluLysLeuAlaThrLeu-504  
 524-LysAspTyrAlaAlaLeuAlaGluGlnPheLys-534  
 544-ValMetMetLeuArgSerMetGlnGlnAla-553  
 555-TyrGluProHisCys-559  
 569-AlaTyrAlaHisPheThrSerProIleArgArgTyrProAspLeuThrValHisArgAlaIleLysAlaVal-592  
 618-AlaAspAspAlaGlyArgAspValGluAsnTrpLeuLys-630  
 641-IlePheGluGlyLysIleSerArgGly-649  
 653-PheGlyIlePheValThrLeu-659  
 667-LeuValHisIleSerAspLeuGlyGlu-675

**Antigenic Index - Jameson-Wolf**

1-MetAsnLysAsnIleLys-6  
 8-LeuAsnLeuArgGluLysAspProPheLeuSerArgGluLysGlnArgTyrGluHisProLeuProSerArgGlu  
 uTrpIle-34  
 37-LeuLeuGluArgLysGlyValProSerLysIleGluSerLeuAlaArgGluLeuSerIleThrGluAspGluT  
 yrValPhePheGluArgArgLeuLysAlaMetAlaArgAspGlyGln-76  
 79-IleAsnArgArgGlyAlaVal-85  
 87-AlaAlaAspLysLeuAspLeuValLysCysArgValGluAlaHisLysAspGlyPhe-105  
 113-ProMetAspGluGlyAsp-118  
 124-ArgGlnMetArgGlyValMetHisGlyAspThrValThr-136  
 138-ArgProAlaGlyMetAspArgArgGlyArgArgGluGlyThrPhe-152  
 154-AspIleValGlyArgAlaGlnSerLysValVal-164  
 168-TyrMetAspArgGlyValAla-174  
 176-LeuGluProGluAspLysArgLeuAsnGlnSerIle-187  
 189-LeuGluProAspGlyValAlaArgPheLysProGluSerGlyGln-203  
 210-GluValTyrProGluGlnAsnArgProAlaVal-220  
 227-LeuGlyAspTyrAlaAspSerGlyMetGluIle-237  
 239-IleAlaValArgLysHisHisLeuProHisArgPheSerGluAlaCysAlaLysSerAlaLysIlePro  
 AspHisValArgLysSerAspLeuLysGlyArgValAspLeuCys-277  
 283-ThrIleAspGlyGluThrAlaArgAspPheAspAsp-294

299-GluLysValGlyArgAsnTyrArg-306  
 316-HisTyrValArgProAspAspAlaIleAspAlaAspAlaGlnGluArgSerThrSerValTyrPheProArg  
 ArgMetIleProMetLeuProGluAsnLeuSerAsnGlyIleCysSerLeuAsnProAspValGluArgLeu-363  
 374-AlaGlyAsnIleLysGluTyrArgPhe-382  
 393-LeuThrTyrAsnGln-397  
 402-LeuSerAspGlyIleGlyAsnProHisLysAlaGlnIle-414  
 424-LeuGlnLysLysAspArgLeuAlaArgGlyAlaValGluPheGluSerValGlu-440  
 443-MetIlePheAspAspAsnGlyLysIleGluLys-453  
 458-ValArgAsnAspAlaHisLysLeuIleGlu-467  
 482-LeuLysAsnLysHisThrAla-488  
 493-HisLeuGlyProThrProGluLysLeuAlaThrLeuArgGluGlnLeu-508  
 516-GlyGlyGlyAspAsnProSerProLysAspTyrAlaAla-528  
 531-GluGlnPheLysGlyArgProAspAlaGluLeu-541  
 555-TyrGluProHisCysGluGlyHis-562  
 575-SerProIleArgArgTyrProAspLeuThrVal-585  
 592-ValLeuAsnArgLysThrTyrThrProAsnLysSerTrp-604

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613-PheCysGluArgArgAlaAspAspAlaGlyArgAspValGluAsn-627  
 633-TyrMetArgAspLysValGlyGluIlePheGluGlyLysIleSerArgGlyValAla-651  
 671-SerAspLeuGlyGluAspTyrPheAsnPheArgPro-682  
 684-IleMetAlaIleGluGlyGluArgSerGlyIleArgPheAsnMetGlyAspArgValAlaValArgValAla  
 ArgAlaAspLeuAspAspGlyLysIle-716  
 724-GluSerGlyArgArgLysValLysLeu-733  
 735-AlaSerAlaLysProAlaGlyAlaAlaGlyLysGlyLysSerLysThrThrAlaGluLysLysThrAlaArg  
 CysGlyLysValArgGlyArgGlyValProAla-769  
 771-AlaGluSerGlyLysLysAlaLysLysProValProIleLysValLysLysArgLysGlyLysSer-792

**Hydrophilic Regions - Hopp-Woods**

1-MetAsnLysAsnIleLys-6  
 8-LeuAsnLeuArgGluLysAspProPheLeuSerArgGluLysGlnArgTyrGluHis-26  
 37-LeuLeuGluArgGlyValProSerLysIleGluSerLeuAlaArgGluLeuSerIleThrGluAspGluT  
 yrValPheGluArgArgLeuLysAlaMetAlaArgAspGlyGln-76  
 79-IleAsnArgArgGlyAla-84  
 87-AlaAlaAspLysLeuAspLeuValLysCysArgValGluAlaHisLysAspGlyPhe-105  
 113-ProMetAspGluGlyAsp-118  
 140-AlaGlyMetAspArgArgGlyArgArgGluGlyThr-151  
 155-IleValGluArgAlaGlnSerLysValVal-164  
 176-LeuGluProAspLysArgLeuAsn-184  
 189-LeuGluProAspGlyValAlaArgPheLysProGluSerGly-202  
 210-GluValTyrProGluGlnAsnArgProAlaVal-220  
 230-TyrAlaAspSerGlyMetGluIle-237  
 239-IleAlaValArgLysHisHisLeu-246  
 249-ArgPheSerGluAlaCysAlaLysSerAlaLysLysIleProAspHisValArgLysSerAspLeuLysGly  
 ArgValAspLeu-276  
 284-IleAspGlyGluThrAlaArgAspPheAspAsp-294  
 299-GluLysValGlyArgAsnTyr-305  
 318-ValArgProAspAspAlaIleAspAlaAspAlaGlnGluArgSerThr-333  
 358-ProAspValGluArg-362  
 376-AsnIleLysGluTyrArg-381  
 406-IleGlyAsnProHisLysAlaGlnIle-414  
 424-LeuGlnLysLysArgLeuAlaArgGlyAlaValGluPheGluSerValGlu-440  
 443-MetIlePheAspAspAsnGlyLysIleGluLys-453  
 458-ValArgAsnAspAlaHisLysLeuIleGlu-467  
 496-ProThrProGluLysLeuAlaThrLeuArgGluGlnLeu-508  
 517-GlyGlyAspAsnProSerProLysAspTyrAlaAla-528  
 531-GluGlnPheLysGlyArgProAspAlaGluLeu-541  
 576-ProIleArgArgTyrProAsp-582  
 592-ValLeuAsnArgLysThrTyrThrPro-600  
 613-PheCysGluArgArgAlaAspAspAlaGlyArgAspValGluAsn-627  
 633-TyrMetArgAspLysValGlyGluIlePheGluGlyLysIleSerArg-648  
 684-IleMetAlaIleGluGlyGluArgSerGlyIle-694  
 697-AsnMetGlyAspArgValAlaValArgValAlaArgAlaAspLeuAspAspGlyLysIle-716  
 724-GluSerGlyArgArgLysValLysLeu-733  
 735-AlaSerAlaLysProAlaGlyAlaAlaGlyLysGlyLysSerLysThrThrAlaGluLysLysThrAlaArg  
 CysGlyLysValArgGlyArgGly-766  
 771-AlaGluSerGlyLysLysAlaLysLysProValProIleLysValLysLysArgLysGlyLysSer-792

**g989****AMPHI Regions - AMPHI**

36-AlaGlnSerThrAlaAsnAlaAla-43  
 53-AlaGlyLeuThrLysLeu-58  
 80-SerAlaThrAspPhe-84

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104-ProHisIleTyrGlyAla-109  
 178-GluLeuArgLysTyrAlaAspGlyIle-186  
 195-AlaThrProSerAsnProThr-201  
 287-ValThrProGluSer-291  
 293-SerValHisGlyMetTyrLysValSer-301  
 312-TrpThrArgHisSerArg-317  
 357-SerTyrGlnIleSerGluPro-363  
 439-SerCysAlaArgPheLysAsnHisAlaAsp-448

**Antigenic Index - Jameson-Wolf**

41-AsnAlaAlaAspAlaSer-46  
 52-ProAlaGlyLeuThrLysLeuAspSerSerGlnIle-63  
 76-TyrGluAlaAspSerAlaThrAspPheThr-85  
 89-ValGlnGlySerLysAsnGlyIleThrLysThrThr-101  
 111-LysValAsnAspAsnLeuThr-117  
 127-GlySerAlaThrGluTyrGluLysAspSerValLeu-138  
 141-AsnIleAsnLysLeuGly-146  
 159-LysLeuAsnGlyArgHisSerPheGly-167  
 174-HisAsnSerAlaGluLeuArgLysTyrAlaAspGlyIleProLysAlaGln-191  
 196-ThrProSerAsnPro-200  
 206-IleLysAlaAspGlyHisAlaAspValLysGlySerAspTrpGly-220  
 230-AspIleAsnAspArgAlaArgValGlyValAsnTyrArgSerLysValSerHisThrLeuLysGlyAspAla  
 GluTrpAlaAla-257  
 259-GlyAlaLysGlnGlnTrpAsnAspAsnMet-270  
 278-AlaAsnGluLysAlaSerVal-284  
 287-ValThrProGluSer-291  
 298-TyrLysValSerAspLysAlaAspLeu-306  
 313-ThrArgHisSerArgPheAsnLys-320  
 323-LeuPhePheGluLysGluLysAsnIleAlaAsnGlyLysLysSerAspArgThrThrIleThrProAsnTrp  
 ArgAsnThrTyrLys-351  
 353-GlyLeuGlyGlySerTyrGlnIleSerGlu-362  
 372-PheAspLysProProValArgAsnAlaAspTyrArgMetAsnSerLeuProAspGlyAsnArg-392  
 402-HisIleGlyLysAsnHisVal-408  
 419-AsnAspThrSerTyrArgThrAlaLysAlaSerGlyAsnAspValAspSerLysGlyAlaSerCysAlaArg  
 PheLysAsnHisAla-447

**Hydrophilic Regions - Hopp-Woods**

56-ThrLysLeuAspSerSerGln-62  
 76-TyrGluAlaAspSerAlaThr-82  
 90-GlnGlySerLysAsnGlyIleThrLys-99  
 130-ThrGluTyrGluLysAspSerValLeu-138  
 159-LysLeuAsnGluArgHisSer-165  
 175-AsnSerAlaGluLeuArgLysTyrAlaAspGlyIleProLysLysAlaGln-191  
 206-IleLysAlaAspGlyHisAlaAspValLysGlySerAsp-218  
 231-IleAsnAspArgAlaArgVal-237  
 241-TyrArgSerLysVal-245  
 249-LeuLysGlyAspAlaGluTrpAlaAla-257  
 278-AlaAsnGluLysAlaSerVal-284  
 299-LysValSerAspLysAlaAspLeu-306  
 316-SerArgPheAsnLys-320  
 323-LeuPhePheGluLysGluLysAsnIleAlaAsnGlyLysLysSerAspArgThrThrIle-342  
 372-PheAspLysProProValArgAsnAlaAspTyrArgMet-384  
 386-SerLeuProAspGlyAsn-391  
 421-ThrSerTyrArgThrAlaLysAlaSerGlyAsnAspValAspSerLysGlyAlaSer-439  
 441-AlaArgPheLysAsnHisAla-447

**g992****AMPHI Regions - AMPHI**

6-ArgHisLeuLysAsnMetGlnIleLysLysIleMetLysTrp-19  
 24-LeuSerLeuLeuGlyAlaLeuGlyTyr-32  
 45-AlaValLeuAspValLeuGlyThr-52  
 72-HisSerTyrThrGlyThrValSerLysValTyr-82  
 140-TyrGlnArgGluValAlaGlnVal-147  
 158-GlnValGlnAspGly-162  
 179-AspPheAlaAspTyr-183

**Antigenic Index - Jameson-Wolf**

1-MetPheArgArgHisArgHisLeuLys-9  
 33-ThrGlyTyrAspSerGluAlaValArg-41  
 51-GlyThrAlaGlyAspValGlyPhe-58  
 60-AlaProValArgArgArgAlaSerAlaLysSerGlyHisSerTyr-74  
 79-SerLysValTyrAspGlyAspThr-86  
 90-IleAspGlyAspGlyAlaLysHisLysIle-99  
 105-AspAlaProGluMetLysGlnAlaTyroGlyThrArgSerArgAspAsnLeuArgAlaAlaGluGlyArg  
 LysValSer-131  
 134-ValPheGluThrAspArgTyrGlnArgGluValAla-145  
 148-SerAlaGlyLysThrAspLeu-154  
 168-LysSerTyrAlaLysGluGlnGlnAspLysAlaAspPhe-180  
 187-GlnIleGlnAlaGluArgGluArgLysGlyLeuTrpLysAlaLysAsnProGlnAlaPro-206  
 208-AlaTyrArgArgAlaGlyArgSerGlyGlyAsnLysAspTrpMetAspSerValGlyGlu-228

**Hydrophilic Regions - Hopp-Woods**

1-MetPheArgArgHisArgHisLeuLys-9  
 35-TyrAspSerGluAlaValArg-41  
 60-AlaProValArgArgArgAlaSerAlaLysSerGlyHis-72  
 80-LysValTyrAspGlyAspThr-86  
 90-IleAspGlyAspGlyAlaLysHisLysIle-99  
 105-AspAlaProGluMetLysGln-111  
 113-TyrGlyThrArgSerArgAspAsnLeuArgAlaAlaAlaGluGlyArgLysValSer-131  
 134-ValPheGluThrAspArgTyrGlnArgGluValAla-145  
 148-SerAlaGlyLysThrAspLeu-154  
 169-SerTyrAlaLysGluGlnGlnAspLysAlaAspPhe-180  
 187-GlnIleGlnAlaGluArgGluArgLysGlyLeuTrpLysAlaLysAsnPro-203  
 211-ArgAlaGlyArgSerGlyGlyAsnLysAspTrpMetAspSerVal-226

**g993****AMPHI Regions - AMPHI**

6-GlySerPheGlnGlyProLeuAspLeuLeuLeu-16  
 35-ThrGlyGlnTyrLeuHisTyrIleAlaGlnMet-45  
 105-GlyLeuAspAlaLeuProArgAla-112  
 133-GluValTyrIleAlaAspLeuMetGlnAlaTrpLeuGly-145  
 152-HisThrArgSerHisGluValIle-159  
 169-MetThrAlaIleLeuArgArgLeuAsnGluHisGlyIleCysArgPheHisAlaLeuPheAsn-189  
 198-IleValAsnPheIleAlaLeuLeu-205

**Antigenic Index - Jameson-Wolf**

7-SerPheGlnGlyProLeu-12  
 20-ArgLysGlnAsnIleAsp-25  
 70-LeuLeuLeuProArgThrGluAlaValGluAspGluGluAlaAspProArgAlaGluLeuValArg-91  
 108-AlaLeuProArgAlaGlyArgAspPhe-116

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125-IleAlaAlaGluThrLysLeuPro-132  
 148-SerArgAlaLysHisThrArgSerHisGluValIleGln-160  
 174-ArgArgLeuAsnGluHisGlyIle-181  
 189-AsnProGluGlnGly-193  
 207-LeuAlaLysGluGlyLeu-212  
 216-valGlnGluAspGlyPheGlyGluIleArgIle-226  
 228-LeuAsnHisGluGlyAlaHisSerAspGlyIlePheGlyThrArgGlyGlyArgAspValPhe-248

**Hydrophilic Regions - Hopp-Woods**

20-ArgLysGlnAsnIleAsp-25  
 70-LeuLeuLeuProArgThrGluAlaValGluAspGluGluAlaAspProArgAlaGluLeuValArg-91  
 108-AlaLeuProArgAlaGlyArg-114  
 125-IleAlaAlaGluThrLysLeuPro-132  
 148-SerArgAlaLysHisThrArgSerHisGluValIleGln-160  
 174-ArgArgLeuAsnGlu-178  
 207-LeuAlaLysGluGlyLeu-212  
 216-valGlnGluAspGlyPheGly-222  
 242-ArgGlyGlyArgAspValPhe-248

**g996****AMPHI Regions - AMPHI**

21-LysSerAlaArgThrHisAlaLysIlePro-30  
 50-ProGlyGluSerTyrProAlaGlnLeuGlnLysLeuThrGlyTrpAsn-65  
 75-ThrSerAlaGlnAlaLeuSerArgLeuProAla-85  
 104-LeuArgLysValProGluGlu-110  
 115-AsnIleAlaLysIleIleGluThrValGlnLys-125  
 140-LeuGlyAlaLeuPheGlyHisLeuSerAsp-149  
 167-GlyAlaTrpAlaGlu-171  
 186-AsnGlyLysGlyTyrArgLysPheAlaGluAsnLeuAsnGlnPheLeuArgLysHisGlyPhe-206

**Antigenic Index - Jameson-Wolf**

1-MetAsnArgArgThrPhe-6  
 18-CysGlyArgLysSerAlaArgThrHisAlaLysIleProGluGlySerThr-34  
 46-TyrGlyAlaAsnProGlyGluSerTyrPro-55  
 69-GlyGlyValSerGlyAspThrSerAla-77  
 87-LeuAlaArgLysProLys-92  
 99-GlyGlyAsnAspPheLeuArgLysValProGluGluGlnThrArgAlaAsnIle-116  
 121-GluThrValGlnLysGluAsnIle-128  
 148-SerAspHisProLeuTyrGluAspLeuSerGluGluTyrGly-161  
 174-GlyAsnAsnAsnLeuLysSerAspGlnIleHisAlaAsnGlyLysGlyTyrArgLysPheAlaGluAsnLeuAsnGlnPheLeuArgLysHisGlyPheArg-207

**Hydrophilic Regions - Hopp-Woods**

18-CysGlyArgLysSerAlaArgThrHisAlaLysIleProGlu-31  
 49-AsnProGlyGluSerTyr-54  
 71-ValSerGlyAspThrSerAla-77  
 87-LeuAlaArgLysProLys-92  
 102-AspPheLeuArgLysValProGluGluGlnThrArgAlaAsnIle-116  
 121-GluThrValGlnLysGluAsnIle-128  
 154-GluAspLeuSerGluGluTyrGly-161  
 177-AsnLeuLysSerAspGlnIleHisAlaAsn-186  
 188-LysGlyTyrArgLysPheAlaGlu-195

**g997****AMPHI Regions - AMPHI**

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18-TrpAlaGlyLeuSerAlaAlaVal-25  
 70-TyrArgGlyValLeuArgLeuMetLysThrIleGly-81  
 107-ProLeuProAlaProLeuHisIle-114  
 123-ArgValProSerAlaPheLysAlaLysLeuLeuAlaAspMetSerAspLeuGlnLysSerAlaArgLeuGly-146  
 164-AlaAlaValMetGlnPheTrpGlnProLeuValTrpGly-176  
 189-ValLeuCysAsnValLeuSerAsp-196  
 222-AlaLeuAlaGluLeuGlnArg-228  
 241-ArgLeuAsnThrLeuPro-246  
 275-GluGlyThrProGluHisValGlnThrAla-284  
 300-TyrAlaGluProValArgLeuProAlaProLeuThrGlyIleAlaAspGly-316

**Antigenic Index - Jameson-Wolf**

3-AsnThrProHisProArgProLysIle-11  
 37-GluAlaGlyArgGlnAlaGlyGlyArgAlaArgThrLeuAlaGlyAsnThrAspGlyPheGly-57  
 78-LysThrIleGlySerAspProArgAlaAla-87  
 122-ArgArgValProSerAlaPheLys-129  
 132-LeuLeuAlaAspMetSerAspLeuGlnLysSerAlaArgLeuGlyGlnProAspThrThr-151  
 156-LeuLysGlnArgAsnValProArg-163  
 180-ThrProLeuGluThrAlaSer-186  
 197-GlyValLeuThrLysSerGlySerAspTyrLeuLeuProLysGlnAspLeu-214  
 225-GluLeuGlnArgLeuGlyAlaAspIleArgLeuGluThrArgValCysArg-241  
 243-AsnThrLeuProAspGlyLysVal-250  
 273-LeuProGluGlyThrProGluHisVal-281  
 324-ProGlyGlnAlaProAspCysProGlnAsnGluValSer-336  
 341-ValSerAspArgValGlyAlaPheAlaAsnArgTerTerTerTer-355

**Hydrophilic Regions - Hopp-Woods**

5-ProHisProArgProLysIle-11  
 37-GluAlaGlyArgGlnAlaGlyGlyArgAlaArgThrLeuAlaGlyAsn-52  
 80-IleGlySerAspProArgAlaAla-87  
 122-ArgArgValProSer-126  
 132-LeuLeuAlaAspMetSerAspLeuGlnLysSerAlaArgLeuGlyGlnProAspThrThr-151  
 198-ValLeuThrLysSerGlySer-205  
 208-LeuLeuProLysGlnAspLeu-214  
 225-GluLeuGlnArgLeuGlyAlaAspIleArgLeuGluThrArgValCysArg-241  
 246-ProAspGlyLysVal-250  
 276-GlyThrProGluHisVal-281  
 326-GlnAlaProAspCysProGlnAsnGluVal-335  
 341-ValSerAspArgValGly-346

It will be understood that the invention is described above by way of example only and modifications may be made whilst remaining within the scope and spirit of the invention.

**CLAIMS**

1. A fragment of a protein disclosed in international patent application WO99/57280 or WO00/22430, wherein the fragment comprises at least one antigenic determinant.
2. The fragment of claim 1, having a length of 100 amino acids or less.
3. The fragment of claim 1 or claim 2, having a length of 5 amino acids or greater.
4. The fragment of any preceding claim, having an amino acid sequence disclosed in Table I.
5. A polypeptide having 50% or greater sequence identity to the fragment of any preceding claim.
6. A protein comprising one or more fragment of claim 1, claim 2 or claim 3, with the proviso that the protein is not one of the complete protein sequences disclosed in international patent application WO99/57280 or WO00/22430.
7. An antibody which recognises the fragment according to any one of claims 1 to 6.
8. A protein comprising a peptide sequence, wherein the peptide sequence is recognised by an antibody according to claim 7.
9. Nucleic acid encoding the fragment of claim 1, claim 2 or claim 3, the polypeptide of claim 5, or the protein of claim 6 or claim 8.
10. A composition comprising the fragment of claim 1, claim 2 or claim 3, the polypeptide of claim 5, the protein of claim 6 or claim 8, the antibody of claim 7, and/or the nucleic acid of claim 9, wherein the composition is a vaccine, a diagnostic reagent, or an immunogenic composition.
11. The composition of claim 10 for use as a medicament
12. The use of the fragment of claim 1, claim 2 or claim 3, the polypeptide of claim 5, the protein of claim 8, the antibody of claim 7, and/or the nucleic acid of claim 9, in the manufacture of (i) a medicament for treating or preventing infection due to Neisserial bacteria (ii) a diagnostic reagent for detecting the presence of Neisserial bacteria or of antibodies raised against Neisserial bacteria and/or (iii) a reagent which can raise antibodies against Neisserial bacteria.
13. A method of treating a patient, comprising administering to the patient a therapeutically effective amount of a composition according to claim 10.